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Report of the
Industry and Trade Research Steering Group

1.   The Industry and Trade Research Steering Group includes representatives from some of the major producers and consumers of Bank research in these areas. When formed in May 1978, it was given the following functions: 1/

   1.   To consider and define research priorities in the industrial development/trade area for the next three to four years;

   2.   To make recommendations as to the operational application of Bank research on industry and trade;

   3.   To act as liaison with the External Panel on Research in Industrial Development and Trade.

This report summarizes the Group's conclusions concerning research priorities and the relation of research to operations. It is timed to precede the final round of discussion with members of the External Panel.

2.   The Group's findings and recommendations are discussed below under four major headings:

   a)   Relation to Operations;

   b)   Topical Areas;

   c)   Level of Activity; and

   d)   Organization of Activity.

Relation to Operations

3.   It is generally agreed that a great deal more could and should be done to increase the utility of research on industry and trade to operations. The problem does not relate only to RPO research; equally, if not more, important is the fact that relevant research done outside the Bank is not effectively utilized. Nor is enough being done to develop or exploit research capability in the Bank's client institutions (see below, para 29).

1/   Memorandum from Hollis B. Chenery and David L. Gordon dated May 26, 1978. The Group was also given the responsibility to advise the Research Committee as well as to provide liaison with the Industrial Development Coordinating Committee on matters concerned with research and its relation to operational needs.

4.   Although many research projects have been developed with operational objectives in mind and with considerable effort in dissemination, the bulk of research in the trade and industry area has aimed primarily at reaching academic standards and has mainly been disseminated through publication in journals or technical monographs. While operational applications have been limited, high standards of Bank research, along with the Bank's reputation for research quality, has enabled it to attract some of the world's best talents in areas where its research has concentrated. Adding to the attraction is the prospect of being able to do research on policy issues of operational consequence. The Bank's continuing ability to recruit and retain a research staff of high quality and motivation will depend in part on how the Bank manages its research activity.

5.   Two additional points deserve mention. First, the Research Committee provides a mechanism for attempting to insure that research is directed toward appropriate ends. The mechanism has worked reasonably well, at least insofar as the Group does not consider that there has been any major misdirection of research in terms of the topics covered, although the Committee has served primarily as a filter rather than a provider of guidance on research directions. Greater attention needs to be paid to achieving a proper balance among the mix of research activities, particularly a more effective application of research in operations. Second, notwithstanding the academic orientation of a major portion of their dissemination effort, researchers have sought in various ways to bring out the potential relevance of their research and to promote its utilization in Bank operations and in member countries' policy analyses.

6.   In addition to circulation and discussion of research reports, a principal means of dissemination within the Bank has been through the involvement of researchers in operational missions; such involvement increasingly takes the form of a "demonstration effort", designed to provide an example of how to approach a particular problem or set of issues. This form of dissemination is hampered, however, by our having too few researchers to "spread around;" the demand for the specialized expertise embodied in the Bank's researchers far exceeds the supply, and there is no budget provision for research applications. Understandably, operational staff seeking help for a particular country or problem want more than reference to a past, present, or forthcoming demonstration effort done elsewhere. Episodic consultation by research staff has worked well in some cases, but has so far been practiced rather infrequently.

7.   Research to academic standards requires long gestation periods for production of the initial output. There is often failure to communicate results in what operational staff consider to be an accessible form. Both problems may be traced in part to the way in which research is managed, which is to say that they are not inherent in the nature of much of the RPO research that is done. In many cases, research is preempted by other non-RPO tasks given high priority in the short run. This interrupts the continuity and interferes with the timely completion of research. If more time and effort is to be devoted to dissemination within the Bank, either the research and

related support staff (see below) must be expanded, current forms of publication will have to be given lesser priority, or the number of projects undertaken must be cut back.

8.   The problem is not simply one of dissemination. Operational staff are frequently not as familiar as they should be, judged by their own criteria, with research products that are targeted specifically to their needs. Here too the problem is one of time pressure in the face of multiple tasks. Moreover, the absence of feedback from operational to research staff impedes progress in designing efficient means of communication and eventual assimilation.

9.   Effective assimilation of research into operations requires more than the preparation of communicative reports of findings. Much of the case study research focused on policy issues could usefully be replicated in areas outside the original sample, in the context of operational work; this may call for design of short-cut procedures and would be greatly facilitated by the preparation of "manuals" to expound various aspects of appropriate methodology.

10.   In the current situation, operational staff do not have the time to replicate policy-focused case study research; or to apply quantitative methods developed through research; or even to identify issues on which probing analysis is both required and feasible, or -- given the issue -- to select the proper mode of analysis and supervise its implementation. Under existing staff constraints, most of the deeper analysis that should be done would have to be carried out either by non-operational staff or by consultants. Moreover, operational staff are often not well informed regarding studies of specific policy issues that would be highly relevant to operations in particular countries.

11.   Operational staff naturally have a strong desire that research staff do more to increase the assimilation of world-wide research and the utilization of external research resources in the Bank's country economic and sector work. Given staff constraints this objective competes with direct research efforts. The Group agrees that a substantial increase is warranted in the resources devoted to assimilation and utilization. But if this is not to be at the expense of direct research, it will require considerable expansion of the staff working on industry and trade.

12.   Individual RPO research undertakings fall along a spectrum, in terms of their distance from potential operational application. But closeness to such application is not a wholly valid criterion for research project selection. Operational application may be circuitous, the Bank using work done elsewhere that was prompted, made possible or reinforced through original research by the Bank. Moreover, not all issues of fundamental concern are amenable to research at a short distance from operational application; research to improve methodologies and to test conventional assumptions about underlying phenomena is considered furthest from operational application, but may have a high long-term payoff.

13.   Finally, it must be recognized that RPO research is but one of a number of related activities that support operations through one means or another. The most notable example of other support activities felt to be greatly beneficial to operations is information gathering, synthesis, and reporting in the areas of trade in manufactures, keeping tabs on a range of specific industries, and (now being initiated on a systematic world-wide basis) the compilation and analysis of data on DFC subprojects. In relation to the Bank's own operational needs, insufficient resources are allocated to this type of activity.

Topical Areas

14.   The Group has reviewed past research and priorities for future research according to the topical headings used by the External Panel. Memoranda prepared for discussion are available, as is the summary contained in the Group's interim report for discussion with the External Panel. A somewhat different set of topical headings is employed in this report.

15.   The Group does not feel it should try to identify individual, high priority RPO projects for the future -- which generally require considerable further work to define them satisfactorily -- so that this report deals primarily with emphasis or allocation among topical areas. The Bank's understanding of the issues under the various headings has progressively evolved. Detailed priorities are clearest in those areas where work has progressed the farthest, but priorities among broad areas tend to favor those in which the work has progressed least (if at all). The background documents referred to above may be consulted for more specific discussion of some project priorities. By the same token, there is a critical need to crystalize researchable projects in other areas.

16.   The following discussion consists of a listing of topical areas, with a brief description of the contents of each and an indication of priority for future work. A summary is provided at the end.

17.   Industrial Organization/Management: The Bank has only recently initiated substantial research under this heading. Moreover, out of a vast field, only two sub-topics are being addressed at present.

    (a) Small Scale Enterprises: A major effort is underway to obtain
         an analytically-focused description of small scale enterprises,
         their dynamics and relationships with other industrial or finan-
         cial entities, in a number of countries. The project is seriously
         understaffed, especially in view of demand for the participating
         researchers' involvement in operational missions. There is need
         for further research to a rigorous professional standard, parti-
         cularly on the relationships of small/medium with large enter-
         prises.

    (b)   <u>Public Enterprises</u>. Problems of public enterprise performance are widespread and serious, a continual source of concern in many areas of Bank operations. It is not easy, however, to define research topics that would yield results of general application. A modest project is in progress, focused on managerial efficiency. As a prelude to any new research initiatives in this field -- apart from the continuing attention it received in country economic, sector and project work -- it would be desirable for the Bank to review in more depth the research going on elsewhere; and perhaps to convene a panel, including outside specialists, to identify specific needs and comparative advantage for research by the Bank.

18.   <u>Industrial Technology</u>: There has for some time been a small but stable commitment of research resources to technological issues. The smallness of the research staff has impeded interaction with operational staff, to the detriment of the dialogue essential for effective dissemination. Steps have been taken to rectify the situation, but the problem of insufficient manpower remains.

    (a)   <u>Capacity Utilization</u>: No further research <u>per se</u> is proposed in this field. However, the results of past Bank and outside research are not well known to operational staff. There is a need to produce one or several reports summarizing past research in terms that will maximize its potential usefulness in the conduct of country economic and sector work.

    (b)   <u>Technology Policy</u>: In addition to several intensive studies of technological choice in a few selected industrial activities, a review of worldwide research has been undertaken to determine policy implications, especially as regards employment. While identification of priorities for further research awaits final discussion of this review among Bank staff, it seems likely that new research should emphasize the means of supporting institutions (especially those solidly based within developing countries) to acquire access to appropriate technologies and to strengthen the idigenous technological base. In any event, top priority in this area attaches to strengthening the dialogue between research and operational staff.

    (c)   <u>Technological Change</u>: The Bank has not sponsored research in this area, though some operational work aims at fostering technological change. The design of appropriate topics for research that could eventually guide Bank lending in this field, deserves priority attention.

19.   <u>Industrial Support Institutions</u>: To date, there has been little research within the Bank on the design of supporting institutions which provide credit, technical assistance, and the like; until recently the focus of most of this work has been on credit.

(a) Industrial Financing: Much of the Bank's work on credit markets is relevant, although not focused on industry per se. Research on the role of informal credit institutions has recently begun. Likewise research on transaction costs for industrial financing of different categories, and simplified credit scoring procedures. More work on credit institutions, criteria and procedures, and their results, will undoubtedly be indicated.

(b) Technical Assistance and Advisory Services: A study has been started to examine the functioning of the Technical Consultancy Organizations established in India by financial institutions. On the other hand, a proposal to study the need for a "Technology Referral Service" was recently turned down by the Research Committee. The SSE research project (17(a) above), which will also throw light on access to and choice of technology (18(b)) should help to define the role of industrial extension services and the needs for further research in this area.

(c) Entrepreneurial Development: The Bank has undertaken no studies on this subject, but clearly it is an important factor in the industrialization process. Here too (as with 17(b) above) it appears that a review of work done elsewhere is needed to determine what is the proper role for Bank research.

20. Trade in Manufactures: The Bank has an extensive body of work under this heading, including both formal research and informal collecting, synthesis, and reporting. Continuation of such work deserves priority, to take advantage of the analytical base established and to provide important information to the operating staff.

(a) Trend Reporting: There is a clear need to allocate staff on a regular basis to monitor recent and past trends, and to make projections, owing to the absence of adequate up-to-date information from other sources. There is equally a need to evaluate medium-run trends among industries and across countries. To the extent possible, continued efforts should be made to document trends in trade in relation to those in capacity and production coordinated with that on industry studies (para 23 below), on which it must rely heavily for detailed analysis of individual industries.

(b) Market Access: Several major projects are in progress, while a welcome effort is being taken to establish up-to-date monitoring capability. Pending results, no further initiatives seem to be needed except the work implict in the conduct of industry studies.

(c) Institutions/Marketing: Research has recently been started on the institutional circumstances that facilitate manufactured exports. Further work may be warranted, depending upon the outcome of this research.

(d) <u>Inter-LDC Trade</u>: There are several possible areas of research on economic integration, among which the experience of developing countries with product specialization areas is the most promising. Greater interest attaches, however, to the future prospects for trade among developing countries in general that would take place in response to market incentives. Research in this area may be carried out in the framework of a projected study on world trade in manufactures to be considered below.

21.   <u>Industrial Strategy/Policy</u>: This has been the subject of most of the Bank's past research on industry and trade. As regards the role of trade and trade policies, further research does not appear to be urgent. Rather, priority should be placed on making use of past research in country economic and sector work -- which entails further case study replication, using short-cut methods when appropriate. There is, however, need for research on other aspects of industrial strategy and overall policy, in particular those relating to employment and labor markets as well as technology.

(a) <u>Incentive Policies/Domestic Resource Costs</u>: This is doubtless the best researched of all sub-topics in the Bank's portfolio. However, the work needs to be extended to cover countries rich in natural resources, and those just beginning the process of industrialization. These and other extensions, and especially further application of the research, can now best take place in the context of country economic and sector work.

(b) <u>Export Promotion</u>: The on-going project concerned with export incentives and the welfare effects of export promotion may be considered to fall under the previous sub-topic; and there should be continued application through country economic and sector work.

(c) <u>Employment and Labor Markets</u>: Insufficient attention has been given to the operation of labor markets in developing countries. Work on small scale enterprises represents a very modest start toward understanding of possible employment enhancement. Attention should further be given to the existence of labor market distortions, in particular those caused by government action, and their effects on employment opportunities.

22.   <u>Comparative Advantage, Patterns of Industrialization and Trade, Economic Growth</u>: Work is nearing completion on two projects which provide information regarding patterns of industrial growth and structural change. Apart from the updating that is implicit in trend reporting, no further research appears warranted to follow up these projects. A more ambitious project involving general equilibrium modeling was recently initiated; the scheduled review of progress at mid-term would provide an opportunity to assess its promise more concretely. Finally, there is need to examine the factors determining comparative advantage, with a view to analysing prospective changes in the structure of world trade in manufactured goods.

23.   Industrial Programming: There has been only one RPO concerned with methodologies for project selection specifically in the industrial sectors.

   (a) Project Programming: A long standing RPO has refined the use of mixed integer programming to analyze alternatives as regards location, scale, timing and design of inter-connected projects within individual sub-sectors. Application is furthest advanced for fertilizers. The methodology appears to have proven relevance for sub-sectoral analysis, and it is time that provision be made for application within as well as outside the Bank.

   (b) Project Appraisal Criteria: While various limitation in the use of conventional criteria are recognized and criticized, proposals for further research into methods of project identification, design, and/or appraisal have not been forthcoming. Lacking specific operational staff proposals for work in this area, the Group, while accpeting its potential importance, is inclined to postpone its consideration.

24.   Industry Studies: Industry studies to keep up-to-date on developments in particular sub-sectors constitute an on-going activity of the Industrial Projects Department. Coverage is greatest and documentation for general staff use is most extensive for fertilizer. Other units have worked episodically on a few selected industries, including steel, textiles, clothing, electronics, and machinery. Policy advice in regard to specific sub-sectors, not to mention project work, requires continuing analysis of changes in technologies, cost, market and business strategies. Additional resources are needed to put industry studies on a more regular basis, with more documentation for general use. Extension of the work on basic intermediate products, such as steel, chemicals and pulp and paper, deserves high priority. There is a wide consensus also that the engineering industries deserve a strong research effort.

25.   Country Studies: Several in-depth analyses of particular issues concened with industrialization, extending and intensifying normal country economic and sector work, have been undertaken, a few financed by the Research Committee. Intensive country studies focusing on industrial sector conditions and issues do not always require Research Committee funding, but they do require resources -- particularly Bank staff, at least to identify issues and oversee and/or absorb the studies.

Level of Activity

26.   The appropriate level of resources to be allocated to research needs to be viewed in the context of all activity that supports country economic, sector and project work in one way or another. It cannot be assessed in the absence of a Bank strategy for the continual improvement of the informational and analytical basis of its operations. This strategy must, on the one hand, consider how the Bank can make use of worldwide research; and, on the other, take account of the Bank's role in assisting its member countries to improve the basis for policy formulation and project implementation.

27.   The Group cannot undertake to pose and evaluate alternative strategies with respect to the role of the Bank vis-a-vis the efforts of its member countries. It simply assumes a modest increase in Bank resources devoted to undertaking studies, in the context of country economic, sector and project work, to improve the basis for policy formulation and project implementation in specific member countries. It urges, moreover, that opportunities be explored to enlist and enhance the research interest, capability and resources that exist in a number of the Bank's more sophisticated DFC and other clients, by helping them to design and carry out studies of high professional standard and relevance for industry and trade policy.

28.   The Group is most concerned with what can be done to improve the informational and analytical basis for the Bank's own operations. Over the past decade, the Bank has successfully established a staff that does research, but too few resources have been devoted to achieving the effective use of research (whether Bank or otherwise) in operations. Owing to the pressures on operational staff, most of the burden of promoting the use of research has fallen on the research staff. The research staff working on industry and trade is too small simultaneously to do research of high academic quality, to engage in other support activities including the application of research, and to promote access to and use of world wide research in these areas; consequently, additional staff to assist in the latter two functions are required.

29.   It is the view of the Group that highest priority should be placed on providing access to and facilitating use of research--which might entail a sharp reduction in research to an academic standard if the current level of central staff (and complementary) resources cannot be increased. However, the Group recommends that resources should be increased, to permit continued high standard research in specific areas of primary concern to the Bank's operations. This recommendation is based on the Bank's strong comparative advantage in this kind of research, which derives ultimately from the physical proximity of researchers to operational staff and the interchanges of information and ideas that are thereby promoted.

Conclusions

30.   The Group has recommendations relating to particular areas in the industry and trade field. These recommendations are summarized in Table 1 where an indication of the staffing implications of the recommendations for central staff (DPS and CPS) is also provided. Furthermore, Table 2 shows the size of existing and proposed staff for research-related activities in central units.

Table 1

Summary of Recommendations

Topical Area	Principal Recommendation	Staffing Implications
A. Industrial Organization/Management		
Small Scale Enterprises	Expand research, operational support	Increase present staff
Public Enterprises	Consider need for additional Bank research	None - only one staff at present
B. Industrial Technology		
Capacity Utilization	Targeted report for operational staff	Use consultant of YP
Choice of Technology	Awaits outcome of current discussions	None in short run
Technological Change	Prepare research program	Requires additional staff
C. Industrial Support Institutions		
Industrial Financing	Consider need for additional Bank research	)
Extension Services	- same as above -	) Likely to require increase in present staff
Entrepreneurial Development	Evaluate need for Bank research	)
D. Trade in Manufactures		
Trend Reporting	Expand present program, put on regular basis	Increase present staff
Market Access	Await completion of on-going research	None in short run
Institutions/Marketing	- same as above -	- same as above -
Inter-LDC Trends	Consider need for additional Bank research	- same as above -
E. Industrial Strategy/Policy		
Incentive Policies/Domestic Resource Costs	) Shift to country studies	) Change staff functions; provide additional
Export Promotion	)	) staff for applications as needed
Employment/Labor Markets/Technology	Evaluate relevance of existing research	Change staff orientation
F. Comparative Advantage, Industrial Structure	Institute research on comparative advantage	Reallocation of staff
G. Industrial Programming		
Project Programming	Determine need for Project Programming Unit	Unit would require additional staff
Project Appraisal Criteria	No research foreseen at present	None
H. Industry Studies	Expand, put on a more regular basis	Increase present staff
I. Country Studies	Support Regional Offices' Initiatives	Requires additonal staff

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Table 2

Professional Staff Needs in Central Units[1]
(professional man-years)

	Existing Staff			Proposed Staff		
	Research	Other	Together	Research	Other	Together
Industrial Organization/Management (incl. small scale enterprise)	2.5	1.0	3.5	4.0	2.0	6.0
*Industrial Technology (incl. technological change)	1.0	–	1.0	2.0	1.0	3.0
*Industrial Support Institutions	0.5	0.5	1.0	2.0	1.0	3.0
Trade in Manufactures	0.5	3.5	4.0	1.0	4.0	5.0
Industrial Strategy/Policy	2.0	1.0	3.0	2.0	3.0	5.0
Comparative Advantage, Pattern of Industry	3.5	–	3.5	1.0	–	1.0
*Industrial Programming	0.5	0.5	1.0	–	2.0	2.0
Industry Studies	–	3.0	3.0	–	5.0	5.0
TOTAL	10.5	9.5	20.0	12.0	18.0	30.0

1/ Exclusive of regional allocations; country studies are therefore omitted. For details see Annex Table 2.

31.   The recommendations would entail maintaining the size of existing professional staff in research on industry and trade, with a reallocation taking place among the individual areas. The Group does not suggest that any ongoing research be abandoned abruptly. Indeed, it assigns highest priority to completing research now underway, so that the lessons it has to offer may be learned and put into practice. Correspondingly, the pace at which the shift in focus can be achieved depends upon the rate at which existing research is completed.

32.   At the same time, increases are recommended in the size of central professional staff that is engaged in research-related activities in support of Bank operations. All in all the total number of professional staff engaged in research-related activities on industry and trade and located in central units would rise from 20 to 30.

33.   Under the recommendations made, research-related activities would also be undertaken by the Regional Offices. Such work might relate to any of the areas of industry and trade considered above. As the needs of the individual regions vary, the staffing requirements are indicated only for the industry and trade areas as a whole. Providing the resources are actually earmarked for these activities, two professional staff members per region might be appropriate.

34.   The Group urges that greater use be made of special panels (with external representation) in determining priorities and defining research topics within the broad categories listed earlier. Experience suggests that researchers have an understandable tendency to underestimate the feasibility and potential benefits of research in areas of which they have little specialized knowledge. Thus the recruitment of researchers having backgrounds new to the Bank has stimulated the extension of research into new areas. For areas about which there is uncertainty as to the need or appropriateness of Bank research, special panels could objectively assess whether the Bank would have a comparative advantage; on the other hand, where the need is clear, panels can help to define detailed priorities.

35.   Finally, the Group also urges that, where appropriate, research be more directly related to country economic, sector, and project work. At a minimum, efforts should be made to distill major findings from country studies under particular topical areas and according to a useful typology. As regards project work, closer links may take any number of forms: for example, research ideas may evolve out of selective involvement by researchers in the project cycle, or research may be directed towards learning from past project experience through in-depth ex post evaluation. In the past, the research staff has tended to relate more to country economic and sector work than to project work; the slow trend toward greater balance in this respect could usefully be accelerated.

36.   Additional staff in the amount of the number shown in Table 2 would permit approximate doubling of existing work in each of the areas except those that are starred, where the increment would be far greater in percentage terms. In all areas, additional staff would be required to put existing work on a regular, sustained basis. At present, a critical mass of research and related support staff resources is lacking in all these areas.

37.   The recommended increment to staff working on industry and trade should be allocated to fill the gap between research and its use. Continuing research to an academic standard would then be roughly unchanged in staff resources assigned, while its concentration by topical area would shift over time in accord with the priorities outlined earlier.

Allocation of Resources
Devoted to Research-Type Activity
in the Areas of Industry and Trade

This annex provides information regarding the magnitude and composition of Bank resources allocated to research-type activities in the areas of industry and trade in manufactures. The first section discusses the allocation of Research Committee funds; the second, the allocation of professional staff. As regards staff time, separate data are given for RPO research and for other activities that are not directly operational in the sense of being linked to either country economic and sector or project work, but which add to the informational and analytical base of Bank operations.

Research Committee Funds

Research Committee funds pay for consultants and "temporary" research assistants as well as for many other categories of expenditures, such as the cost of undertaking surveys, computer charges, and non-Bank secretarial assistance. To avoid mixing apples and oranges, it would be desirable to separate expenditures from Research Committee funds into at least three categories: consultants and research assistants, each in man-week terms, and other, in money terms. Among other things, this would permit an assessment of the extent to which Bank staff are supplemented by the use of outside researchers. Unfortunately, a breakdown along these lines could not be obtained, owing to the time it would take to search through the individual project files.

The Research Committee has allotted a total of $3.030 million to research on industry and trade. Annex Table 1 shows the allocation of this total among topical areas, with no distinction being made among types of expenditure. 1/ The data are in current rather than constant dollars. Expenditures are, however, shown separately for pre-FY78 and for FY78 and beyond, to permit an assessment of the shift over time among major topical areas. 2/

The data in the table reveal a marked shift over time in the composition of Research Committee funding. A pronounced fall in the shares devoted to industrial technology, industrial/policy, and industrial programming is being offset by a rise in the shares going to industrial organization and management, industrial support institutions, and trade in manufactures. Considering all Research Committee approved projects, one finds that roughly one third of the total funding has been allocated to trade in manufactures and one quarter to industrial strategy/policy. Industrial technology (15 percent), industrial organization and management (11 percent), and industrial programming (8 percent) account for the bulk of the remainder.

1/ Included are only those RPOs that fall under the purview of the External Panel on Research in Industrial Development and Trade.

2/ For FY79 and beyond, the figures pertain to budget allocations rather than actual expenditures.

Annex Table 1

Allocation of Research Committee Funds[1/]
(In percent)

	Pre-FY78	FY78 on	Total
A. Industrial Organization and Management	-	11.5	11.5
Small Scale Enterprises	-	8.2	8.2
Public Enterprises	-	3.2	3.2
B. Industrial Technology	10.5	4.5	15.0
Capacity Utilization	3.5	-	3.5
Choice of Technology	7.0	4.5	11.5
Technological Change	-	-	-
C. Industrial Support Institutions	1.1	3.5	4.6
Industrial Financing	1.1	3.5	4.6
Extension Services	-	-	-
Enterpreneurial Development	-	-	-
D. Trade in Manufactures	3.8	28.4	32.2
Trend Reporting	-	-	-
Market Access	2.3	25.3	27.6
Institutions/Marketing	-	3.1	3.1
Economic Integration	-	-	-
Other[2/]	1.5	-	1.5
E. Industrial Strategy/Policy	16.7	8.2	24.9
Incentive Policies/Domestic Resource	9.2	.3	9.5
Export Promotion	2.4	3.7	6.1
Comparative Advantage	5.1	4.2	9.3
Employment/Labor Market/Technology	-	-	-
F. Industrial Programming	6.6	1.2	7.8
Project Programming	6.6	1.2	7.8
Project Appraisal Criteria	-	-	-
G. Industry Studies	-	-	-
H. Country Studies	-	3.9	3.9
Total	38.7	61.3	100.0

Source: Annual Reports to the Executive Directors on the World Bank Research Program.

1/ Based on figures in current dollars.

2/ RPOs 670-07 (International Model) and 670-19 (Expansion in Manufacturing for Exports in Developing Countries).

Professional Staff Time

A total of approximately 820 professional manweeks per annum is currently being devoted to RPO and other research-type activity in the areas of industry and trade. 1,2/ As shown in Annex Table 2, RPO research accounts for slightly more than one half of this total. The remainder is spent on other research-type activities, as discussed further below.

RPO Research: Over half of the total professional staff time going into RPO research is focused on industrial strategy and policy. Another quarter is allocated to work on industrial organization and management. Industrial technology (9.3 percent), industrial programming (5.7 percent), trade in manufactures (3.5 percent), and industrial support institutions (3.1 percent) account for the remainder.

The allocation among topical areas of professional staff is not the same as that of Research Committee funds (compare Annex Tables 1 and 2). There are two principal reasons for this. First, staff time continues to be put into projects well after the completion of most (sometimes all) expenditures financed by Research Committee funds, owing to lags in the preparation of draft reports and publications. Second, there is greater reliance on non-Bank researchers in some areas than in others. The use of consultants to substitute for Bank staff is particularly great in RPO research on trade in manufactures and country studies.

Other Research Activities: Regardless of the perspective chosen, RPO research is not the only means whereby Bank activities add to the stocks of knowledge and tools of analysis. Determining where to draw the line between operations and research is, however, not easy. Moreover, the broader one's perspective, the more difficult it becomes to assemble data in meaningful breakdowns. With this difficulty specifically in mind, it was decided to exclude all activities of the Regional units, and to concentrate only on the Central units. Correspondingly, work undertaken by the Regional offices on country studies is omitted, whether in the context of country economic or sector analyses. Equally, involvement in Regional work by the Central staffs is excluded, even though it is complementary to the latter's research activity.

Activities that add to the informational and analytical base of Bank operations need not necessarily result in reports written with a more general audience in mind. For example, the Industrial Projects Department (IPD) is continually engaged in industry studies, through information gathering undertaken in connection with project work. But only for a few selected

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1/ It was not possible within the time available to obtain staff time estimates for the period preceding FY78.

2/ This includes only direct time. Thus, to convert to approximate full-time equivalent manyears, divide by 42.

Annex Table 2

Allocation of Professional Staff to Research-Type Activity
Average for FY78/9: Manweeks

	RPO Research [1]	Other Research Activities [2]	Total
A. Industrial Organization/Management	12.3	5.2	17.5
1. Small Scale Enterprises	11.3	.8	12.1
2. Public Enterprises	1.0	3.9	4.9
3. Other	-	.5	.5
B. Industrial Technology	4.8	1.7	6.5
1. Capacity Utilization	.4	-	.4
2. Choice of Technology	4.4	.5	4.9
3. Technological Change	-	1.2	1.2
C. Industrial Support Institutions	1.6	3.3	4.9
1. Industrial Financing	1.6	1.5	3.1
2. Extension Services	-	1.8	1.8
3. Entrepreneurial Development	-	-	-
D. Trade in Manufactures	1.8	15.9	17.7
1. Trend Reporting	-	11.7	11.7
2. Market Access	.1	4.2	4.3
3. Institutions/Marketing	1.7	-	1.7
4. Economic Integration	-	-	-
E. Industrial Strategy/Policy	27.7	5.6	33.3
1. Incentive Policies/DRCs	4.5	.3	4.8
2. Export Promotion	6.8	.5	7.3
3. Comparative Advantage, Etc.	16.4	.9	17.3
4. Technology	-	3.9	3.9
F. Industrial Programming	2.9	.8	3.7
1. Project Programming	2.9	.2	3.1
2. Project Appraisal Criteria	-	.6	.6
G. Industry Studies	-	16.4	16.4
H. Country Studies	-	-	-
Total	51.1	48.9	100.0

Sources: RPO Research -- Time Reporting System.
Non-RPO -- Information provided by individual units.

1/ Includes only RPO's that fall under the purview of the External Panel on Research in Industrial Development and Trade.

2/ Includes some RPO research; see accompanying notes.

industries (notably fertilizer) are reports prepared that provide ready access to this information by non-IPD staff. Equally, there is a great deal of learning from past project experience that is nowhere recorded in readily accessible form. However, for our purposes, activities are considered to improve the information and analytical base of Bank operations only if they result in written output (not excluding memoranda) that are disseminated for use outside the originating Department. 1/

The "Notes to Annex Tables 2 and 3," which appear at the end of this Annex, identify the activities included as non-RPO, or other, research activities. The professional staff time put into these activities is nearly equal to that put into RPO research, but its composition differs considerably. In particular, non-RPO research is more heavily concentrated on industrial support institutions, trade in manufacturers, and industry studies. The last two categories each account individually for about one third of the total professional staff time spent on non-RPO research, with industrial strategy and policy (11.5 percent), industrial organization and management (10.6 percent), and industrial support institutions (6.7 percent) constituting the bulk of the remainder.

Location of Activity. Annex Table 3 shows the proportion of total professional staff time accounted for by the various organizational units. As it clearly demonstrates, major involvement in research-type activity is found in several units. The Economics of Industry Division, in the Development Economics Department (DED), contributes slightly more than one third of the total; its activity ranges across most of the topical areas shown in the previous tables. Other major contributors include: the Economic Analysis and Projections Department, largely concentrated on trade in manufactures; the Employment and Rural Development Division (DED), reflecting work on employment and labor markets; the Industrial Projects Department, focused on industry studies; the Public Finance Division (DED), concerned with public enterprises and industrial support institutions; and the Development Research Center, an important locus of work on industrial strategy and policy.

1/   Note that the definition of non-RPO research-type activities used here is somewhat broader than that used to identify "Departmental Studies" in the annual reports to the Executive Directors on the World Bank Research Program.

Annex Table 3

Staffing of Research-Type Activity
Average for FY78/9:   In Percent

Development Policy Staff

  Development Economics Department
      Economics of Industry   36.1
      Employment & Rural Development   11.7
      Public Finance   8.6

  Economic Analysis and Projections Department   19.6

  Development Research Center   7.9

Central Projects Staff

  Industrial Development & Finance Department   4.5

  Industrial Projects Department   10.4

  Project Advisory Staff
    Science & Technology Advisor   *

Other

  International Finance Corp.   1.2
                                                        _____

Total   100.0

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* Denotes involvement based largely on consultant inputs.

Location of Activity. Annex Table 3 shows the proportion of total professional staff time accounted for by the various organizational units. As it clearly demonstrates, major involvement in research-type activity is found in several units. The Economics of Industry Division, in the Development Economics Department (DED), contributes slightly more than one third of the total; its activity ranges across most of the topical areas shown in the previous tables. Other major contributors include: the Economic Analysis and Projections Department, largely concentrated on trade in manufactures; the Employment and Rural Development Division (DED), reflecting work on employment and labor markets; the Industrial Projects Department, focused on industry studies; the Public Finance Division (DED), concerned with public enterprises and industrial support institutions; and the Development Research Center, an important locus of work on industrial strategy and policy.

Caveat

The extent of activity within the Bank which adds to the informational and analytical base of Bank operations in the industrial area is obviously broader than that reflected in the estimates presented here. Our estimates exclude reseach assistant and consultant inputs, which play an important role in several areas. For example, consultants employed by the Science and Technology Advisor have done a major share of the work on industrial technology policy within the Bank. Equally, our estimates exclude work focused on individual countries as well as the much of that which aims to learn from past project experience. In regard to the latter, for example, post-evaluation undertaken by the Operations Evaluation Department is omitted.

We are nonetheless confident that our estimates reflect reasonably well the extent of resources allocated to providing information usable (and used) across a wide variety of operational needs. By and large, the activities that are excluded result in information that is either obtained primarily for use in the originating unit or is not effectively targeted to a broader set of interests. In turn, we are equally confident as regards the indicated concentration among topical areas.

Notes - Continued

E.   Analysis of primary commodity processing in LDCs; work on trade
            among less developed countries; joint IBRD-UNIDO monograph on
            Industrial Development Policy.

G.   Statistical reporting on prices of manufactures.

Development Research Center

D (all).   Continued work by B. Balassa.

F2.   Work on various aspects by G. Pursell

Industrial Projects Department

A2.   Continued work by B. Walstedt.

B2.   Supervision (joint with DED Industry Division) of RPO 671-77.

G.   Studies of fertilizer, pulp & paper, steel mechanical engineering
            and other industries.

Industrial Development and Finance Department

A1.   Criteria and project identification guidelines for small scale
            enterprises lending; other work on small scale enterprises,
            including study of sub-contracting, government procurement,
            choice of technique in Bank sub-loans, etc.

A3.   Subproject data system.

B1.   Continued work by F. Moore.

C2.   Work on export zones, construction industry, RD&E institutions.

E.   Sector paper on employment and small scale enterprises; industrial
            policy paper (forthcoming); interest rate issues; involvement on
            Steering Group.

F1.   Supporting inputs to operational extensions of RPO 670-24.

G.   Studies of mechanical engineering, petroleum, and electronics
            industries.

Notes - Continued

Project Advisory Staff .

E5.   Work on various aspects of science and technology policy related to industry, mostly by consultants.

Industrial Finance Corporation

B2.   In-house studies of technology choice, including that by M. Amsalem.

FORM NO. 75
(1-76)   THE WORLD BANK

ROUTING SLIP	DATE: 12/5/78	
NAME		ROOM NO.
Industry and Trade Research		
Steering Group		

APPROPRIATE DISPOSITION	NOTE AND RETURN
APPROVAL	NOTE AND SEND ON
CLEARANCE	PER OUR CONVERSATION
COMMENT	PER YOUR REQUEST
FOR ACTION	PREPARE REPLY
INFORMATION	RECOMMENDATION
INITIAL	SIGNATURE
NOTE AND FILE	URGENT

REMARKS:

Attached is a copy of the revision

of the Interim Report, prepared for the

External Research Panel, which some

members of the Steering Group do not

seem to have received.

FROM:	ROOM NO.:	EXTENSION:
Secretary to Mr. Gordon	D.428	74111

A. Introduction

1.   This memorandum attempts to summarize discussions of the Industry
and Trade Research Steering Group over the past three months, on the major
blocks of subject matter comprising Bank research in these areas (schedule
of meetings in Annex I). For each of these topical blocks, one or more
memoranda were prepared as a basis for discussion; these are also attached
for reference (Annex II), along with a more general initial memo by the
Chairman of the Steering Group, dated July 13, 1978 (Annex III).

2.   A matter of general concern is the basic orientation of the Bank's
research on industry and trade. The research objectives cited in the terms
of reference for the External Panel include, inter alia, "to support all
aspects of Bank operations . . ." and to "broaden our understanding of the
development process." To meet these objectives the research program will
necessarily involve a mix of work on innovative methodologies with work of
immediate relevance to specific operational problems. The time required to
develop new methodological approaches and to perceive operational "payoff"
may be lengthy. Ultimately, however, all such work should be related to and
of value for policy and operational purposes, and in areas where the Bank has
some comparative advantages over academia.

3.   This relationship needs to be continuously reviewed, its definition
refined, in order to avoid a widening gap between researchers and their work
on the one hand and the practitioners in the Bank's project and industrial
policy work on the other, and worsening of the already serious problem of
dissemination/assimilation. At present, the staff of both the research
units and those engaged in operations are fully committed to ongoing pro-
grammed activity. There is virtually no leeway to permit the researchers to
communicate in systematic fashion the results and potential applications of
their studies, nor for the practitioners to receive and digest any such
information or to formulate their needs for further research in a way that
would enable the researchers to try to meet these needs. Opportunities for
operational applications and feedback are thus probably wasted in substantial
part, or exploited only sporadically.

4.   It would be highly desirable also for the research staff to work
closely with the operational and sector departments and have a participatory
role in the Bank's industry sector work and policy dialogue. Staff constraints,
however, also severely limit such participation; and even so limited, it
entails a substantial cost to their primary function.

B. Incentives and Domestic Resource Costs; Economic Integration in Developing Countries; and Export Promotion and Market Access

5.   Incentives and Domestic Resource Costs –

   (a)   Following the publication of the book The Structure of Protection

in Developing Countries, the research project 670-01 "Development Strategies in Semi-Industrial Countries" analyzed relative incentives provided to exports and import substitution in countries following different development strategies. The findings, reported in several working papers and in a volume, have influenced the orientation of Bank policy analysis and, in some instances, policy-making in the countries studied.

(b)   671-87 "Industrial Policies and Economic Integration in Western Africa" provides detailed estimates on incentives and domestic resource costs in industrial and agricultural activities in four Western African countries. The research project has led to the preparation of a tariff and tax reform in Senegal and an investment project in Mali; also, the methodology employed has found several applications in the Bank.

(c)   While future research on semi-industrial countries is likely to bring diminishing returns, demands for country applications of the effective protection-domestic resource cost methodology should be met. Furthermore, it would be desirable to undertake research on industrial strategies in non-industrial and natural resource-rich countries (on this point see also Paras 23 and 24 below). Research on an efficient import substitution export promotion sequence and on adjustment problems involved in policy changes may also be desirable.

6. Economic Integration in Developing Countries

(a)   Apart from 671-87 and a few general papers on the subject, research on economic integration concentrated on the practical application of the project approach. This has been done in the Fertilizer Study for East Africa, carried out in the framework of 670-24 "Programming in the Manufacturing Sector", and in subsequent applications on regional specialization in fertilizer in ASEAN and in the Andean Common Market.

(b)   Several possible areas of research on economic integration in developing countries have been identified, including experience with integration through trade liberalization and product specialization schemes, future possibilities for economic integration, and the benefits and costs of inter-regional trade in the framework of preferential agreements.

7. Export Promotion and Market Access

(a)   Following the research project 671-10 "Promotion of Nontraditional Exports", work has been undertaken on the extent of export incentives and the social profitability of exports (671-35 "Export Incentives in Developing Countries"), on institutional and marketing problems involved in exporting various consumer goods (671-68 "Key Institutions and Expansion of Manufactured Exports"), and on market penetration in developed countries by the exports of developing countries (671-67 "Effects of Increased Import of Manufactured Goods from Developing Countries," the manufacturing part of 671-66 on Western Europe, and 671-87, covering Australia, Canada and Japan.

(b)   Research results in this area have been utilized to prepare background papers for World Development Reports 1978 and 1979. At the same time,

the staff requirements for preparation of these papers have adversely affected the work on trade in electronics and electrical machinery, textiles, and clothing. This work is of considerable importance, however, and should be continued and possibly extended to other industries. Also, it would be desirable to extend the study of the institutional and marketing aspects of export promotion to capital goods.

(c)   Work on the future demand and supply situation in intermediate products, such as steel, fertilizer, and petrochemicals, would also be useful, as it would help to indicate future possibilities for LDC exports in this area. More generally, it would be desirable to examine future changes in the comparative advantage of the developing countries.

C. Comparative Advantage; patterns of Industrialization and Trade; Economic Growth

8.   Work is nearing completion on two projects -- Patterns of Industrial Development (RPO 671-05) and A Comparative Study of the Sources of Industrial Growth and Structural Change (RPO 671-32). These projects provide useful information regarding systematic patterns in industrial growth among two-digit industrial sectors; they offer an analytical perspective that could be more generally utilized in sector mission work. Unfortunately, only the latter project, dealing with fewer countries but in greater detail, deals with employment patterns.

9.   A third project -- "The Sources of Growth and Productivity Change: A Comparative Analysis" (RPO 671-79) -- is far more ambitious, as it involves a general equilibrium analysis of trade-offs among policies with respect to their effects on growth, distribution, etc. In anticipation of the research, the approach has been tested in country economic work on Turkey, where the analysis of current policy options was favorably received. The research consists of ex-post analysis of policy changes that affect industrial structure; it will cover Korea, Turkey, and possibly a third country. The analytical difficulties are formidable, due to data problems and the complexity of the models.

10. .   Owing to its experimental nature, the third project has been funded for only the first year, after which progress will be reviewed and a decision made regarding further allocations. In turn, as part of the same project, a proposal will be forthcoming for parallel analysis in greater depth of two industrial sectors in each country. This is intended to permit a deeper analysis of the sources of productivity change. Further initiatives in this general area must await the completion of on-going work and evaluation of its results.

D. Employment Enhancement and Industrial Development -- Issues and Institutions; Small Scale Industry, and Interaction with Large

10.   This topic clearly is important in the context of the Bank's concern

for alleviating urban and rural poverty and its emphasis on creating not just _more_ jobs but _more productive_ (i.e., higher paying) jobs. Papers by J. Stern made a beginning on this problem, and highlighted the significance of both _direct_ and _indirect_ effects and the wide differences among various industrial subsectors. The second Stern paper also explored employment effects and implications in countries at various stages of development. Specific research topics that result in improved methods of measuring or enhancing employment through industrial investment, or that bear on the choice of industrial subsector priorities or mix, or that affect the design of projects, etc., would be much to the point.

11.   The status report of the Small Scale Industry Project (671-59) suggests that the analysis and synthesis of the massive data being gathered will be difficult and will require substantial input by the regional and functional staff concerned. It also indicates that several further research topics may deserve priority attention:

    (a)   analysis of suitable financial institutions and policies, and assessment of institutional arrangements in support of SMEs (para 14);

    (b)   interaction and balance between large and small industries, based on comparative country analysis; and

    (c)   research focussed on one or more industrial subsectors (e.g., the machine-building industries, para 22).

Work on technology transfer to SMEs might best be fitted into a more general study of the technological institutions for industrial development (para 18).

12.   There is need for more systematic analysis of institutions supporting SME development -- for technology, management, marketing, export promotion, product design, etc., as well as various kinds of finance. What could be undertaken almost immediately is a review of experience in SME support, including criteria for judging institutional effectiveness, analytical descriptions of those support systems which are regarded as particularly strong, and possible means for closer linking of technological assistance with project appraisal in Bank DFC lending, with a view to taking greater account in such lending of capital saving devices and processes; some aspects of such a review are already underway. The examination of the record of experience of Technical Consultancy Service Centers and Technological Research Centers in several Indian states, now being initiated, should also be instructive. The modalities of rural industrialization may require separate analysis, for which the case study method used in 671-59 should be supplemented by other approaches.

E.   Industrial Financing Systems and Institutions; Credit Markets;
       Public Enterprises

13.   There is considerable interaction between the availability and conditions of finance and the pattern of industrialization. The Bank has a 28-year history of lending through financial intermediaries, much more

diversified since about 1970; it has also financed some capital market and venture capital institutions on a limited scale. A fresh look is needed at the relationship between the development of these entitites and industrial growth requirements. What kinds of specialization are productive? What strains and problems arise at various stages of expansion and diversification? (The panoply of industrial financing agencies promoted in recent years in Korea -- including merchant banks, venture capital and equity funding institutions, leasing companies, a potent Guarantee Fund, etc., -- which is being emulated in the Philippines and elsewhere, deserves in-depth analysis by an operationally-oriented unit, perhaps the Capital Markets Department of IFC.) How can more effective use by made of the commercial banking system to provide longer-term finance for industry? What incentives and policies will stimulate efficient financial sector development? How can future Bank programs foster such development?

14.   Of the studies underway the following are relevant to financial and industrial sector work: Commercial Bank Behaviour (RPO 671-25); Capital Market Imperfections (RPO 671-59); Role of Informal Credit Markets (RPO 671-65); Financial Structure and Technology Policy for Small Enterprise Promotion -- a Case Study of India; and the review of the Consultancy Services and Research Centers cited in para 12. Other financial sector work underway or planned will have implications for further research in this field -- e.g., the assessment of means for increasing financial resources for industrial development in the Philippines. The findings so far of the Small Industry Study also call for further work on the transaction cost of financing SMEs and the role of alternative institutional channels. The special Bank study "The World Bank's Approach to Interest Rate and Credit Allocation Issues" (May 1976) also called for follow-up work in this area. Steps to define new priorities in this field would be (a) an assessment of the relevance for other country situations of the extensive research done on India, and (b) commissioning of a study designing a more applied research approach toward institutional and policy solutions for mobilizing longer-term finance for industrial growth.

15.   Public Enterprises. The research project underway on this subject may provide some insights into problems and evaluation criteria specific to public enterprises as such. But while general diagnoses of these problems are often similar, it seems likely that many of the prescriptions must be more country- or industry-specific. The Bank's sector and economic missions are continuously addressing, in various ways, the problems of public enterprise in a country/operational context -- e.g., management, investment planning, relationships with other government departments and pricing and incentive policies. This approach seems potentially more productive than general or comparative studies.

F. Capacity Utilization; Capital-Labor Substitution; and Technological Change

16.   Capacity Utilization: Two projects (RPOs 670-25 and 670-95) have been completed, though it remains to provide adequate reports of their findings. The research indicates that a variety of policies across a number

of fields (e.g., licensing) are in part responsible for low utilization rates, but that changes in these policies alone should not be expected to lead to greatly increased utilization. The research has important applications in industrial sector mission work. While no new research is planned, further work is needed to facilitate operational analysis of the prospects and means for improved utilization in specific circumstances, through the briefing of missions and subsequent review of their findings.

17.   Capital-Labor Substitution: Detailed investigation of the scope for substitution has been carried out for mechanical engineering (RPO 670-23) and is linked to research on industrial investment analysis (RPO 670-24). The preliminary finding is that wide scope exists for substitution, but more so at low than at high output levels. Work is also in progress on technology in textiles (RPO 671-77), where the focus is explicitly on project design and operational staff are involved. This work is significant in that it may directly affect future Bank projects, by reducing costs and increasing benefits through changing the choice of technology. A wider coverage of industries is provided by the survey of recent case studies under the "Appropriate Industrial Technology" (RPO 671-51) project. Discussion of this survey, along with an evaluation of detailed investigations carried out within the Bank, will be needed to determine priorities for further research.

18.   Technological Change: This is a high priority area for future research. The Bank has undertaken no research specifically in this area, though a good deal of operational work has the objective of fostering technological change. This work has led to projects based on pragmatic considerations in a number of countries, but there is an evident need for improving the knowledge on which technical assistance and R&D lending is based. Some present research is tangentially concerned with the mechanisms through which technological change occurs, and there are tentative suggestions for more directly focused studies. Nonetheless, generation of research topics that would lead to useful results will require a good deal of work. Exploratory research to investigate the nature of technological change and factors conducive to different types of technological change is likely to be required. Emphasis must be given both to the role of institutions and the effect of the general industrial policy environment. Research ought to be tailored so as eventually to contribute to the design of Bank lending, aimed at fostering technological change, in specific sub-sectors as well as small and medium scale industry more generally. Attention should also be given to learning from past Bank projects in this area.

G.   Industrial Programming; Studies of Process Industries

19.   Research under the "Programming in the Manufacturing Sector" (RPO 670-24) project has sought to develop a methodology for applied industrial investment analysis. Work on the process industries is farthest along, and comprises model formulation and specific applications for fertilizer (in several countries and regional groupings), cement, pulp and paper, and steel. For these sectors, the methodology focuses on the selection of the location, scale, timing and design of inter-connected projects. Work is also being done

on mechanical engineering, on the analysis of comparative advantage and on choice of technology.

20.   Particularly in the process industries, this work has definite operational usefulness, but the extent and direction of further work is now uncertain owing to staffing constraints and questions regarding the proper locus of responsibility for operational applications. Possibilities for further work include: a) further applications for industries already covered but in other locales; b) extension to new industries, with chemicals being a prime candidate; c) development of algorithms (e.g., GAMS); d) technical assistance to users in country planning offices or consultant involved in project work; e) further research to incorporate aspects heretofore neglected (e.g., uncertainty). Consideration also needs to be given to translating the work done on mechanical engineering into an explicit framework for project selection.

21.   Continuance of work in this area would require allocating staff resources to replace staff who have moved on to other responsibilities. Given the investment already made and the results to date, creation of a small (two-to-three man) unit for continuing work in this field may be justified. This would make feasible assignment of full-time responsibility for informing and educating operating staff regarding potential applications of programming methodology, for monitoring its use and the resulting feedback to refine the methodology and update technological information, and for further extensions in both application and research.

H. Specific Industries Studies

22.   In discussion of several of the above topics it has been suggested that they might most usefully be studied in the context of a systematic analysis of one or more industrial subsector(s) in a few selected countries -- including the industry's structure, product linkages and sequence of development, rela-tive efficiency and interaction of large and small scale units, technology choices, transfer and innovations, employment effects, etc. An obvious candi-date is the machine building industry, given its central role in the industri-alization process and in technology development, its varied character, and its potential for generating exports and employment. It is also an industry on which data are available, in the Bank and elsewhere, in considerable quantity for several countries. An intensive effort over several months will be needed to design a study and identify perhaps three countries for initial attention; to carry it out would involve a major investment of manpower, but it would seem to offer promise of illuminating a wide variety of issues and relationships.

J. Industrial Investment Strategy and Policies for Different Country Situations

23.   The diversity of country situations calls for different designs of industrial growth paths and policies to support them. The categories listed

below are illustrative of possible differentiations. Country sector studies typically include considerable data and descriptive material that suggest significant familial characteristics; analysis of their findings in greater depth, in a more consistent manner, might provide further insights into the special potential and problems of these "types" of developing countries, and operational guidance for dealing with them. The Steering Group has not yet considered possible studies under this rubric; and no common analytical framework to guide ongoing sector work has yet been developed

24.   A typology of industrial development patterns might identify the following:

(a)   countries rich in natural resources (e.g., Venezuela, Iran) where resource-based industries provide the springboard for development but must be supplemented by downstream and supporting activities, and by expanding exports;

(b)   countries just beginning the process of industrial development (e.g., Burma, Cameroon, Paraguay) where financial and manpower resources are limited and a wide range of issues must be faced;

(c)   Sub-Saharan Africa -- similar in many respects to category (b) above, but with certain special features -- high wage levels inhibiting development of labor-intensive exports, dominance of private foreign investment (which may be a causal factor in the dualism of these economies, use of inappropriate technologies and the stunting of small scale enterprise), etc.

(d)   the protective, import-substitution model (extensively studied but its complexities still defying definitive conclusions);

(e)   The "Latin American pattern" (which also extends to certain non-Latin countries), characterized by semi-industrial economies, relatively rich in natural resources, with problems of unemployment, adjustments to continuing inflation and attempts toward greater export orientation.

K.   Conclusions

25.   It is very difficult to draw firm, final conclusions about the World Bank's near-term research program in the fields of industry and trade. The various topics discussed earlier in this memorandum interlock at many points; and with a few exceptions, continuation (and usually extension) of the research avenues opened up so far seems justified on the merits. The question is what can be accommodated within the budget and manpower resources prospectively available. As was suggested earlier, very little flexibility exists at present.

26.   The Steering Group has not yet addressed, in systematic fashion, the establishment of priorities among the various topics outlined above; substantial differences of view, at least of emphasis, are evident. From the discussions

so far, however, it is generally accepted that work already far advanced --
e.g., that on patterns and sources of industrial development -- should be
completed, and possibilities for application of the findings or methodology
be further defined and made accessible to key operational staff, before major
commitments are made to new blocks of research that would preempt these
possibilities. Among potential expanded areas for research it would
seem that technology development deserves a special place -- whether through
a macro approach (para 18) or through study of specific industries (para 22),
or from both perspectives, needs further analysis.

27.   The Steering Group would welcome the views of the External Panel
on this question of priorities. And before the next meeting with the External
Panel the Group will reach specific conclusions on the matter -- assisted
somewhat, we would hope, by the fact that the Bank's budgeting process for
FY80 will have advanced considerably by that time.

28.   The Group has not as yet attempted to quantify staffing and budget
requirements for a research program still undefined and dispersed among
numerous administrative units. However, it would underline the importance
of adequate staff resources to help absorb and apply research results as they
are achieved -- which may often require preparation of a clear synthesis of
findings of use to country, sector or project missions; direct involvement
of research staff in such missions; and time for practitioners to acquaint
themselves in general with what research findings are available, and their
implications and potential uses.

November 29, 1978

1.   This memorandum is intended to help focus discussions on areas that merit attention in further research on industrial development by the Bank. The External Panel on Research in Industry and Trade may find it useful as an indicator of some of the topics that are being considered by the Industry and Trade Research Steering Group that has recently been established to review research programs in these two related fields. The Steering Group proposes, following initial discussions with the External Panel, to prepare a more detailed outline of a near-term future research program in these fields.

2.   This memorandum should be read in conjunction with review of the status of on-going programs, with which the future programs may have strong linkages. Also suggested herein are some additional topics or lines of investigation that are becoming more important in the Bank's work and that have not been adequately covered.

3.   The focus is on topics in industry. Consequently, this memorandum may be regarded as a companion piece -- with a different orientation and coverage -- to the memorandum entitled "Medium Term Work Program in Trade and Commodities."

4.   In order to avoid a long, indigestible list of individual topics, among which it may be difficult to reach any consensus on priorities, a smaller number of topical "families" are identified below. Each family may include a number of individual topics that are closely related, and it is not necessary at this stage to attempt exhaustive identification of specific topics. The order of presentation of the topical families does not imply anything about priorities.

5.   A point of general concern affecting all the topics listed below is the question of the basic orientation of the Bank's research in industry. The four main objectives stated in the terms of reference of the External Panel include, inter alia, "to support all aspects of Bank operations . . ." and "to broaden our understanding of the development process." In order to meet these objectives the research program will necessarily involve a mix of work on innovative methodologies as well as work of immediate relevance to specific operational problems. The time required to develop new methodological approaches and to perceive operational "payoff" may be lengthy. Ultimately, however, all such work must be related and of value to the stated objectives of the research program, and in areas where the Bank has a comparative advantage over academia. This relationship needs to be continuously reviewed, its definition refined, in order to avoid a widening gap between researchers and their work on the one hand and the practitioners in the Bank's project and industrial policy work on the other, and worsening of the already serious dissemination problem. At the same time, due attention must be given to meeting the research needs that emerge from the practitioners' day-to-day work and problem solving attempts. The staffing and organization of research should be such as to enable research staff to work closely with the operational and sector departments and have a participatory role in the Bank's industrial operations and policy dialogue.

The formation and composition of the Steering Group was intended to reflect this necessity, and to take account of the range of questions and options it poses in considering research priorities; the External Panel is urged to do likewise.

A. Industrial investment strategy and policies in selected country situations.

6.   The variety of country situations calls for different designs of industrial growth paths and policies to support them. The following categories are illustrative of differentiations that can be made; in-depth case studies could be undertaken to illuminate familial differences and to provide operational guidance.

(a)   Countries rich in material resources (e.g., Venezuela, Iran, Indonesia). Resource based industries may be used as the springboard for development but must be linked to other downstream and supporting activities, and to expansion of exports.

(b)   Non-industrial economies (e.g., Burma, Cameroon, Paraguay), which are just beginning the process of industrial develop-ment; attention must be given to the relative importance of policy tools, incentives, management and labor training, the role of private foreign investment, and the sequence of import substitution and export development. Research project could take off from work done on basic mission to Tanzania and current sector work in Cameroon.

(c)   Sub-Saharan Africa. While similar in some respects to countries in category (b) above, this group of countries may deserve separate treatment for various reasons. High wage levels may inhibit development of labor-intensive export industries. Dominance of private foreign investment in Africa may have a great deal to do with the dualism of these economies, use of inappropriate technologies and the stunting of small scale enterprise. A comparative study on wage rates and labor productivity would throw more light on this problem, and on reasons for their divergence; this needs further exploratory work and preparation of a research design. A review of the literature on (i) the impact of private foreign investment on African economies, and (ii) the relevant policy frameworks of African governments should be undertaken initially; a great deal has been written but there is little evidence, in sector policy or operational decisions, of its absorption by Bank staff. A systematic review would enable us to take stock of what is known, and to define more correctly the subjects requiring further research.

7.   Other patterns might be the export-oriented East Asian countries, the import substitution pattern which has characterized South Asia in the past (although now changing to some extent), and the Latin American propensity and adaptation to inflation. All have been studied, more or less intensively -- more than those in para 6 above -- but there is continuing need to relate the findings of these studies to other regions and situations (as in para 6).

B.   Employment enhancement through industrial development.

8.   This topic clearly is important in the context of the Bank's concern for alleviating urban and rural poverty and its emphasis on creating not just more jobs but more productive (i.e., higher paying) jobs, since solutions are supposed to be efficient and not simply welfare systems. Papers by J. Stern made a beginning on this problem, and highlighted the significance of both direct and indirect effects, and the wide differences in this regard among various industrial subsectors. The second Sterm paper also explored the implications of employment effects in countries at various stages of development. Specific research topics that result in improved methods of measuring or enhancing employment through industrial investment, or that bear on the choice of industrial subsector priorities or mix, or that affect the design of projects, etc., would be much to the point.

9.   One important sub-family of topics is the employment (and other) aspects of small and medium scale enterprises (SME). Their problems are often thought to be so special as to constitute a separate genus. Are they efficient users of factors? In what industries or activities? How can efficiency be enhanced? What special incentives or technical and technological assistance do they need? What mix of small and large scale industries is effective, and how do they interact, in complementary or competitive ways? More broadly, what is a proper balance between capital-intensive and labor-intensive industries in countries at different stages of development and with different size and population characteristics? What are the implications of large scale, capital intensive patterns of industrial investment for indigenous entrepreneurship, finance, business organization and technology? These are some illustrative issues.

10.   There is need for a more systematic analysis of institutions supporting SME development -- for technology, management, marketing, export promotion, product design, etc., as well as various kinds of finance. What could be done almost immediately is a summary of Bank experience in SME support, including criteria for judging institutional effectiveness, analytical descriptions of those support systems which are regarded as particularly strong, and possible means for closer linking of technological assistance with project appraisal in Bank DFC lending with a view to taking greater account in such lending of capital saving devices and processes. The modalities of rural industrialization may require separate analysis: the nature of industries suitable for rural resource endowments and markets, linkages with agriculture, infrastructure requirements, policies and institutional framework, etc. The case study approach that has often been used (e.g., 671-59) may have to be supplemented by other approaches to this problem.

C. Developing the technological base.

11.   Many countries, particularly those classified as semi-industrial, are increasingly interested in developing their own technological capabilities, reducing dependence on licenses and enhancing their adaptive capacity. Technological assistance to small industry, to be effective, may have to be linked to R&D activity of a simpler character, especially in smaller or poorer countries. Some specific projects are in process of discussion and design, and a few have been approved and are being implemented. Moreover, in industrial sector work more attention is being given to this topic. For example, work on the engineering industries is being stressed because they may have many desirable characteristics (e.g., they tend to be efficient at small scale; they tend to be labor-intensive; the demand is highly income elastic; they have strong backward and forward linkages; there are definite export possibilities; and they are an important "carrier" for technological change). These characteristics need to be more fully demonstrated and conditions for successful projects established through research in depth on the policies, institutions, and methodologies for strengthening indigenous capabilities in countries at different stages of development.

12.   Possibilities of labor-capital substitution are under study in the mechanical engineering industry, with special reference to African conditions (Phase II of R671-51). Depending on the outcome of these projects, further studies of possibilities of improved project design in selected industries may be indicated.

13.   It is recognized that research on technology will require close collaboration between engineers and economists, will have to be product and industry specific, and possibly be conducted in a sequential manner. Hence, we cannot expect to mount a large number of projects in this area. Our main object would be to influence the processes of project preparation and industrial planning by paying more explicit attention to the technical feasibility of capital-saving devices and processes.

D. Financial systems and industrial development.

14.   There is considerable interaction between the availability of finance and the pattern and direction of industrialization. Several topics involve issues that affect Bank operations and hence may deserve attention. The Bank has a long history of lending to financial intermediaries. A fresh look is needed at the relationship between the growth of these entities (and also capital market and venture capital institutions) and industrial growth requirements. What kinds of specialization are called for? What strains and problems arise at various stages of expansion and diversification? What are instruments and conditions for success? What alternative sources of finance (foreign and domestic) are available? What incentives and policies will stimulate the right kind of financial sector development? How should future Bank programs aim to foster such development?

E. Programming models in industry.

15.   This work got off slowly and has had success in the Egypt
fertilizer model, the S.E. Asia and India models; it is in danger of
being terminated for lack of wide recognition of its potential practical
application. There is a whole "cascade" of modelling work that needs
to be pursued: investment planning in a sector for a country; alloca-
tion of output within firms in the industry (the locational aspects are
important); planning output within the firm; linking sector models to
obtain an economy-wide model; inter-country locational models for invest-
ment and output planning. A continuing effort is needed to avoid losing
momentum.   (See 670-24.)

F. Structure and patterns of industrial growth among countries.

16.   This topical area has received a great deal of attention in
the Bank, most notably in project 671-05. Another "round" of activities
recently approved, involving special case studies on Turkey and Korea,
will use a newer and modified data system and will pursue prior country
results to investigate comparisons in several dimentsions. Questions
of a similar kind also arise in the context of Bank operational work.

17.   Decisions to support specific projects by the Bank are made
primarily on the basis of calculations internal to the project and the
country (e.g., economic and financial rates of return). But increasingly
there is awareness that in counseling several countries to pursue (or not)
projects in textiles, pulp and paper, fertilizers, shoes, steel, etc.,
a global (or at least a regional) framework and consideration of dynamic
changes are really required. Also the locational aspects of new invest-
ment have been brought up, specifically by the UNIDO Lima targets; the
FAO has been conducting studies of the phased development of world pulp
and paper resources, and the subject is receiving increasing attention
in various other contexts. In order to have a solid basis for recommenda-
tions on industrial strategy, the Bank should undertake research on the
relative development and locations of investment in selected intermediate
goods (as indeed it does now on a limited basis); but, more importantly,
the research should investigate questions such as: What are the gains
and losses in trade and market control? Will the locational shifts lead
to greater or lesser efficiency? What are the implications for invest-
ment criteria and finance? What are appropriate Bank responses and
approaches in supporting specific projects in these products?

G. Export potential and promotion of industrial goods.

18.   This topical area provides the best example of overlapping
interests in industry and trade. Extensive work has been done in the
past, notably on trade incentive systems, and further work is outlined
in the memo on the work program for trade and commodities mentioned
previously. This research has now reached a stage where it can be applied
to particular country situations, as a basis for assessing or devising
specific operational policies/programs for export promotion. The scope

of the work will have to be tailored accordingly. We have the West
African studies (DRC) at one end, and the Turkey and Portugal examples
at the other. Several other countries will require fresh attention.
We should also assess DFC lending as a tool of export development, with
a view to making it more effective.

H. Policies and programs affecting public sector enterprises.

19.   Increasingly Bank sector missions undertake to review the
performance of public enterprises and suggest policy and institutional
changes to improve their efficiency. Public enterprises cannot be judged
on the same basis as private firms, and we need to develop an analytical
framework adequately to tackle this problem. Our capability to provide
policy advice in such areas as pricing and product mix, incentive and
control mechanisms, financial policies and socio-economic environments
needs to be strengthened. Another key area is the institutional frame-
work for managing and controlling public sector enterprises -- what
forms are appropriate under different political and administrative
contexts, e.g., holding companies as in many Western European countries
or a Public Enterprise bureau as in India.

J. Investment appraisal methodology.

20.   The acquisition and processing of data for shadow pricing and
effective protection or domestic resource cost calculations can be time
consuming and costly. Exploration of short-cuts and "second best" methods
to determine how close they come to full-system results, how sensitive
they are, how much time they actually save, etc., would potentially be
of significant benefit to the project analyst.

K. Studies undertaken in context of DFC and industry lending.

21.   There are relatively few such studies (certainly less than, for
example, in Education or Rural Development) but in a number of cases,
in different countries, they clearly relate to our operational concerns,
e.g., textile sub-sector, characteristics of small industry sub-borrowers,
trade incentives and functioning of financial markets. There is need for
a more systematic review of what exists and of the potential for focussing
the attention of borrowers on key issues in their country context. More
Bank staff support in starting the studies, and in reviewing their impli-
cations and usefulness, would doubtless be required to do this effectively,
and this may be a bottleneck; but effective use of these external resources
should certainly be economic in the longer run.

July 13, 1978
IDFD

OFFICE MEMORANDUM

TO: See distribution below   DATE: December 5, 1978

FROM: Ravi Gulhati, EANVP

SUBJECT: Research on Industry and Trade: An African Perspective

1.   This memorandum should be read as a supplement to the general report of the Steering Group. The aim is to review past Bank research from the standpoint of usability in African settings and to offer some comments on future priorities. Let me hasten to add that the memorandum is being written in a great hurry and there has been very little opportunity for reflection or consultation with colleagues.

Pay-off from Completed Research

2.   Although past research has not treated the key questions for African industrialization, it has a lot of relevance for these countries. For example, Bela Balassa's work on effective protection and biases in incentive systems is very germane in countries such as Kenya, Tanzania, Sudan, Zambia and Madagascar. An analysis of the exchange, tariff, tax and interest rate regimes from this standpoint would illuminate policy options. And yet very few studies of this kind have been made.[a] Another example is the work on capacity utilization which defined alternative approaches for diagnosing the phenomenon of idle capacity. This too is very relevant in East Africa where the problem is widespread and where studies of the causal factors may trigger policy reforms. Few analyses along these lines have been made so far. Yet another example is the Chenery-Syrquin analysis of industrial patterns which provided a framework within which sector studies on individual countries could be conducted. Unfortunately, the results are not very robust for very low income countries (such as those in Sub-Sahara Africa).

3.   Three factors have interfered with the utilization of past research in East African countries. First, regional staff have not had the time to absorb these findings and to apply them in the field. Support from the DPS has been available only on a highly selective basis. Secondly, our member countries are not well-endowed with well-trained, sophisticated professional staffs with appetite for elaborate methodologies. Finally, statistical data are very scarce; industrial surveys are infrequent and there are scarcely any reliable input-output tables or capacity utilization figures. Trade data are less scarce than industrial data.

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[a] The exception is RPO 670-87 which produced case studies in West Africa.

Observations on Future Priorities

4.   It makes little sense to make new research starts while the existing body of knowledge remains considerably under-utilized on account of the shortage of staff required to apply it in specific country situations. Presumably, senior management will not allow this anomalous situation to continue. It can be corrected by (i) expanding substantially the resources for country economic and sector work in the regional offices, (ii) increasing sharply the share of DPS/CPS time devoted to support of operational missions with a corresponding reduction in time for new research, and (iii) increasing DPS/CPS staff so that both operational support and research activity can expand.

5.   There is recognition now of the vast diversity that exists among LDCs. The African countries are very much behind all the rest of the Third World in terms of industrialization and economic development generally. They have low incomes, savings, small populations scattered over vast areas, thin layers of industrial entrepreneurship and an extreme scarcity of managerial/administrative talent. It follows that the key issues for industrial research in Africa will be very different from those in other continents. Furthermore, to be relevant and usable, industrial research on Africa will have to be 'data-saving' in character. It will be a long time before countries in Sub-Sahara Africa acquire the statistical base which exists now in East Asia, Latin America and the mediterranean area. To be usable in the 1980s and 1990s, methodologies will have to be developed for Africa which rely much more on field visits, structured interviews and limited case studies than on econometric techniques and models requiring well-organized censuses, sample surveys and cost-accounting records.

6.   The implications of the special needs of Africa for future Bank research priorities must be recognized explicitly. Of course, this applies not only to industrial and trade research but to all research. If measures are not taken to secure an appropriate balance in the Bank's research portfolio, there is the danger that we will have too little research output which is germane to key African issues and which is usable in data-scarce African settings. Our natural propensity will be to focus on issues which are "researchable", i.e. where available staff can deploy familiar tools in situations which are reasonably well-endowed with statistics. The real challenge for research managers is to avoid falling into this trap. This will not be easy. At least in the short-run, choices will be constrained by (i) the need to complete existing research projects or follow through on a line of enquiry involving a sequence of research projects, (ii) the training, experience and preferences of available staff, and (iii) the haziness of alternative methodologies usable in data-scarce situations. These constraints, however, need not be binding over the medium and long run and research strategy should be responsive to the special needs of Africa both in terms of issues and usable methodologies.

7.   Let me conclude by listing what I regard as key issues in Africa which research on industry and trade should tackle:

a)   While some countries have chosen the etatist route to industrialization (i.e. use of parastatals), others have allowed transnational corporations to enter freely. Both institutional solutions are fraught with problems. There is need to define optimal structures appropriate to the history, ideology and other relevant characteristics of each country. Before this can be done effectively at the country level, however, it is necessary to undertake a number of comparative analyses of (i) the efficiency of parastatals, (ii) regulation of parastatals by core ministries, (iii) the efficiency of transnational corporations, (iv) policy towards private foreign investment, and (v) origin and development of indigenous, private industrial entrepreneurship. To define the methodology for these studies will be difficult and the Bank may not have the relevant expertise. The neo-classical economists will look with horror at this research agenda. And yet the substantive issue is a crucial one.

b)   Most countries have rather small national markets for manu- factures implying limited scope for efficient import substitution. This may turn out to be a major hurdle unless (i) regional or sub-regional markets can be created, (ii) exports to world markets can be generated, despite the detrimental impact of relatively high wages on competitiveness of labor-intensive exports, and (iii) technologies can be identified which are scale-neutral. A study of the future prospects for industrial- ization of Africa should deal with these questions and provide a framework within which sector studies in individual countries can take place.

c)   A number of Governments in Africa with a socialist and egalitarian philosophy are searching for patterns of industrial development different from those characteristic of the now rich industrialized countries or Eastern Europe or the semi-industrial economies of Latin America and East Asia. As "late starters", they wish to avoid the mistakes of earlier industrial drives. Bank research can make a contribution by deriving the lessons of the history of industrialization relevant for 'late starters'. To be useful, such a synthesis will have to draw on scholars familiar with the Soviet and Chinese models as well as Singapore, Brazil, India and Korea/Taiwan models.

d)   There is resistance within the Bank to explore the implications of "appropriate products" (see F. Stewart's writings) although work is under way on "appropriate techniques". I have never understood the reasons for this resistance. If African countries wish to strive

for egalitarian development they will want to question the appropriateness of rich country products for satisfying the basic needs of the population. The concept of "appropriate products" is, of course, applicable to poor countries everywhere but the ideological climate necessary for implementing policies to alter the product-mix exists especially in some African countries, e.g. Ethiopia, Tanzania, Angola and Mozambique. The implications of this strand of thought for industrial policy need to be drawn out after an empirical assessment of the adverse consequences of manufacturing or importing 'inappropriate products'.

RG/mo

OFFICE MEMORANDUM

TO: Distribution List   DATE. December 13, 1978

FROM: Luis de Azcárate, Chief Economist, WAN

SUBJECT: Research on Industry and Trade

I support Mr. Gulhati's memo of December 5 on the subject as practically everything said there applies to West Africa as well. I would like to add three additional areas where research would be useful for us:

a) Labor costs in industry: Africa is often seen as an area where labor is "cheap." However, although nominal wage rates are, of course, low relative to those in developed countries, the actual cost to the firm, taking account of low physical productivity, rates of turnover, and other personnel problems may, in fact, be higher than assumed. Furthermore, the implication of the cheap labor paradigm is that labor is cheap relatively to capital. This also requires further investigation at the level of the industrial firm.

b) Our experience with DFC sub-loans to medium and small-scale enter-prises is that the capital cost per job appears to be higher in West African countries, especially in francophone countries, than in other parts of the world: we would like to know much more about this, especially whether the cif cost of a number of capital goods is generally higher than elsewhere or whether the distri-bution costs are the main factor, or what. Since exchange rates are usually over-valued rather than undervalued, this cannot explain the higher domestic cost of capital equipment. It would appear also that locally-manufactured implements are not particularly cheap.

c) The question of the level and structure of interest rates in Africa is a general one. The prevailing view in Africa seems to be that interest does not weight much in industrial investment decisions and, therefore, it would not help much if, as we often propose, they were raised to more "natural" levels. At the same time, governments always strongly resist any idea to increase interest rates. An investigation on the response of industrialists to actual or hypothetical changes in interest rates (as well as better documentation on the effective cost of bank loans to firms) could help clarify the issue and assist us in our dialogue with the countries.

Attachment

Distribution

Members of External Panel on Industry
  and Trade Research
Members of Steering Group on Industry
  and Trade Research
Regional Chief Economists
Messrs. Chenery, Karaosmanoglu, Balassa, Bery, DPS
        Haq, Streeten, Wright, DPS

cc. Messrs. Chaufournier, Pouliquen, Guetta, Senior Economists

LdeAzcarate/js

OFFICE MEMORANDUM

1.   I would like to comment from a South Asian perspective on some aspects of the work described in your draft Interim Report. In general terms, I think our industrial economists need a supply of "alternative generating tools" for their work in the South Asia Region. By this I mean tools and techniques which enable them to demonstrate to governments the policy implications and alternatives implied by the mix of current problems that the governments face. Examples of this kind of technique or tool are the DRC ratio, which by now is quite an ancient technique but is still very useful in establishing a dialogue with a government which has highly protected and inefficient industries. It enables the economist to give the government some feel for the potential costs and benefits of maintaining the present protective structure or of liberalization. Other examples are, of course, the effective protective rate and effective exchange rate in the areas of tariffs and export promotion respectively. In general then, these are the kinds of tools that would enhance the work of our industrial economists.

2.   A supplementary device which would be of great assistance would be comparative information on the experience of developing countries, and sometimes the developed countries, in the use of various tools in various ways; that is, in the use of various policy alternatives. Here again, it would give our economists more strength and consistency in terms of clarifying for governments the probable outcomes and effects--the cost and benefits--of taking one of the choices that face them. As a case in point, your paper (Section D, paragraphs 10 through 12) describes several studies dealing with the problem of small-scale industry and employment creation. In a number of South Asian countries (e.g., Bangladesh, India, Pakistan) the problem of poverty alleviation consists in creating off-farm (presumably industrial, construction, service) jobs for the masses of rural poor. Although we have initiated some work of our own, we are starved for ideas on how, practically, countries can progress in this area. As an institution we take the view today that the path to rural uplift is not to be found through "trickle down" as GNP slowly grows. Does the answer then lie, e.g., in more focussed efforts such as integrated rural development programs (in a regional planning framework?)? Should public investment be redirected to generate rural employment (small-scale industry? investment in rural infrastructure? creating local industrial production and distribution capacity for meeting basic needs?). There are both broad conceptual questions as well as practical problems of devising strategies, programs and projects. Is there now a large enough body of LDC case study experience (success and failure stories) for us to be able to draw lessons of practical use?

3.   A third useful characteristic of any research should be that it lends itself to the preparation of backup support. For example, the

extensive work done by the Development Research Center on domestic re-
source costs in West Africa has led to a computerized model for analysis
of DFC data. It will probably be possible to collect data from South Asia
in such a manner as to use this program.

4. Another characteristic of Bank research which could be very use-
ful to us would be if it could compile and distill research work being done
outside the Bank, and again turn it into useful techniques and tools. For
example, almost every country in our Region has a network of public enter-
prises which are encountering serious problems of varying kinds. From what
we can see, it would appear that the current Bank research in this area is
considerably behind that being undertaken by other institutions. Indeed,
some of the economists in our own area have in fact been involved in research
into public enterprises and we do have some ideas about approaching the
problem. But this entails pulling together some very useful work which has
been done in recent years by such institutions as the Harvard Workshop on
Public Enterprises and others. To undertake this kind of work is an exces-
sive load for operational program or project economists, and is the kind of
work that should be done by research departments.

5. Our plea, then, is for research which is essentially "research
and development" of technology for the economists involved in Bank opera-
tions. We need tools which enable us to analyze adequately and demonstrate
with clarity and some precision the alternatives available to governments
in various areas of industrial policy ranging from industrial organization
to management, from licensing procedures to the financial structure. We
need to be sure that we are making sense and being consistent across the
Bank when we elucidate the implications of alternative policies to the var-
ious governments with whom we deal. We need to know that the analysis we
are providing and the recommendations we are making are consistent with the
most recent research done in these areas. We feel, therefore, that the
Bank's research should be primarily applied and not "pure". Careful review
of available, applicable research may, however, show some gaps, and these
gaps--insofar as they are preventing useful application by the Bank of
techniques and principles that could further our work--should be filled by
the Bank. To this extent, then, the Bank should leven its work on applied
research with some "gap-filling" pure research.

DWilliams/HPilvin:hh

Distribution: Messrs B. Balassa, H. Fuchs, R. Gulhati, F. Moore,
              R. Richardson, E. B. Waide, Ben King,
              L. E. Westphal, E. J. Stcutjesdijk, M. Selowsky

OFFICE MEMORANDUM

TO: **See Distribution**   DATE: **Nov. 9, 1978**

FROM: **Ardy Stoutjesdijk, DED**

SUBJECT: **Progress Report on Urban Poverty Related Research**

Please find attached a revised draft of a progress report on urban poverty related research, prepared in the context of a review of the Urban Poverty Program of the Bank. An earlier version of the paper was discussed with Messrs. Karaosmanoglu, Jaycox, King, Gordon, and Stone, and the present draft incorporates their comments. Furthermore, comments were received from DED staff.

Your comments and suggestions will be highly appreciated.

cc: Messrs. Chenery
  Karaosmanoglu, VPD
  D. Gordon, DFC
  Jaycox, URB
  Kahnert, URB
  M. Fierro, CON
  B. King, DED
  Selowsky, DED
  Westphal, DED
  Ingram, DED
  Linn, DED
  Mohan, DED
  K.S. Lee, DED
  Leiserson, DED
  Anderson, DED
  Webb, DED
  Balassa, VPD
  Bery, VPD ✔
  Duloy, DRC
  Pyatt, DRC

A PROGRESS REPORT ON RESEARCH ON URBAN POVERTY [1/]

Introduction

A truism that needs restatement from time to time is that research
in economic development is directly or indirectly concerned with poverty.
Poverty of the dimension found in the urban areas of most developing nations
can be alleviated in the longer run only by improved access to productive
employment opportunities. A progress report on research on urban poverty
could therefore be interpreted to cover a wide field. However, it is clear
that a much narrower interpretation is desired in this context, namely the
extent to which the Bank's research efforts is responsive to and supportive
of identified needs following the Action Program and Interim Report of the
Urban Poverty Task Group (October 1975), and subsequent statements on the
subject of poverty in general, and urban poverty in particular.[2/]

The timing for such a progress report appears unusually fortunate,
for several reasons. First, the Action Program called for a statement of a
research strategy that was directly linked to its immediate and longer term
operational requirements; such a statement was prepared in mid-1976.[3/] A
two-year period should be considered as a reasonable time-span to assess
whether this generally approved research strategy has found a satisfactory
degree of implementation. Secondly, the Bank's research program in the area
of income distribution and employment was recently evaluated by an external
panel of experts, namely the Research Advisory Panel on Income Distribution

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1/ An earlier draft of this paper was discussed at a meeting attended by
 Messrs. Karaosmanoglu, Gordon, Jaycox, King, Stone and Stoutjesdijk.
2/ The term "urban" used in this context is in fact short for "non-agri-
 cultural".
3/ Ardy Stoutjesdijk, "An Agenda for Urban Research", May 1976 (mimeo).

and Employment (RAPIDE); its report[1] contains an assessment of both the quality and scope of the ongoing research effort in these areas in the Bank; perhaps more importantly, it contains a number of suggestions for future research that appear of relevance in the present context.[2]

At approximately the same time that the RAPIDE report was issued, an internal report was produced that provided an assessment of the quality and scope of treatment of employment issues in the Bank's country economic analysis.[3] In the sense that this report represents an assessment of the operational state-of-the-art in the analysis of employment issues--with some attention to resource constraints--it provides lessons for the establishment of research priorities that have so far not been drawn explicitly.

Finally, a Steering Group on Bank research on industry and trade was recently established, under the Chairmanship of the Director of the Industrial Development and Finance Department; the first report for consideration by the Group contains valuable suggestions for future research directions, particularly in the field of industrial research, that require more general attention in this context.[4]

The present report will attempt to summarize briefly what suggestions are contained in the above-mentioned analyses with regard to the desirable research portfolio of the Bank, to the extent it relates to urban poverty.

1/ "Report of the Research Advisory Panel on Income Distribution and Employment", May 1, 1978 (mimeo).

2/ A similar panel has been set up to review research on industry and trade; its report is not yet available.

3/ "Employment in the Bank's Country Economic Work: A Review", ECDER/PPRPRD, April 21, 1978.

4/ Memorandum from David Gordon to Members of the Industry and Trade Research Steering Group, July 13, 1978: "Areas for Research on Industrial Development".

The Demand for Research

As stated above, the demand for research connected with urban poverty is articulated in a number of recent papers. Inspite of considerable overlap among them, we shall summarize the recommendations contained in each separately.

a. The Action Program

Although the Action Program identifies the formulation of a coherent urban research program as one among several specific tasks to be undertaken following its acceptance by Bank management, it does provide an indication of the desirable features and scope of such a work program.

An understandably heavy emphasis is placed on a research program with a strong operational orientation. Specifically, the need to develop a consistent definitional and information system to improve the identification and understanding of the target group is earmarked as a short term priority task. At the same time, however, it is realized that our scant understanding of the underlying causes of urban poverty, and of appropriate remedies toward its alleviation (as well as the Bank's potential role) necessitate a major, longer term research effort. While requesting that such an effort aims at an early operational pay-off, the Program gives the broad outlines of a possible work program.

Research should be designed to provide information on ways of creating productive employment for the urban poor; improving their access to basic services; and establishing the links between increases in access to these services and increases in productivity. Research should proceed on the

improvement of the broad analytic framework for urban areas, and the development of a policy model to examine options for absorbing large numbers of poor more efficiently and equitably in LDC cities. Furthermore, it was suggested that research should be undertaken focusing on project experience in promoting small-scale enterprises, as well as toward the development of methodology to trace and quantify the indirect employment effects of industrial lending.

Complementary to research focusing more or less explicitly on urban unemployment, research should be undertaken toward a better understanding of the factors limiting access of the poor to basic urban services. This should entail research on lower cost means of delivering known technology in water supply and in the layout of urban neighborhoods, and the development of more appropriate technology for water supply, sewerage and solid waste removal, and electricity distribution. Finally, research should be conducted focusing on the links between increases in access to basic services and increases in productivity.

b. An Agenda for Urban Research 1/

Following the acceptance of the Action Program by Bank management, a detailed research agenda was drawn up that was to serve as an overall framework for the formulation of individual research undertakings in the area of urban poverty. Naturally, the research agenda took the broad outlines for a Bank-sponsored research program described in the Action Program as its starting point. On the basis of a reasonably comprehensive statement on research needs in the area of urban poverty, as perceived at that time, a specific research strategy was proposed that took likely resource constraints for urban research into account. The proposed research program was generally accepted as a basis for deciding future priorities.

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1/ Op. cit. p. 1.

High priority is given in the research program to what is referred to as "implementation research", that is research directly related and supportive of the implementation of an urban lending program. Not only would this effort require more research in connection with the monitoring and evaluation of urban projects; it also prescribed a systematic attempt to learn from experience around the world and specific projects and policies that were designed to alleviate poverty.

At the same time, emphasis was placed upon the need to learn more about the way cities function, and, in particular, high priority was given to the study of a specific city. Although the ultimate objective of such a study should be to provide a better understanding of important interdependencies in the context of a city--to aid project and program design--the recommended research approach was to focus on important components of the urban system separately, and to attempt to combine these at a later stage into a comprehensive systems study of the urban economy.

An important consideration in the establishment of research priorities on a geographic basis is that the nature and scope of urban poverty varies by country. The research agenda illustrates this point by reference to a simple typology of countries, taken from a recent Bank Staff Working Paper.[1]

c. RAPIDE [2]

The report of the Research Advisory Panel on Income Distribution and Employment covers a far wider field than the one to be covered in this report. However, it includes a number of observations and recommendations that are of direct relevance to the subject of urban poverty.

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[1] The Task Ahead for the Cities of the Developing Countries, World Bank Staff Working Paper, No. 209, July 1975.
[2] Op. cit. p. 2.

A dominating concern of RAPIDE is the Bank's role in the collection and dissemination of reliable, consistent and continuous data on income distribution and employment. Specifically, RAPIDE recommends "A decisive Bank contribution to the design and execution of the 1980 census for a representative panel of countries." This exercise is supposed to throw light on the distribution of income as well as the pattern of wage rates and earnings. [1]/

Although the Panel's recommendations on research in income distribution and employment are placed in an economy-wide context, they can be given a clear urban interpretation. In the income-distributional context the Panel endorses the basic needs approach, especially in the areas of measurement, linkages among components, and characteristics of delivery systems. A research effort with this focus would obviously correspond closely to that identified in the Action Program, and its concomitant research agenda, addressed to the measurement and scope of urban poverty, and the provision of basic urban services.

On the employment side, emphasis is placed upon analysis of labor markets, and the relationship between wage rates, earnings and employment in different institutional settings and for different sectors. Importance is attached to the measurement of employment and underemployment, and a syste-

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[1]/ In this connection, it may be useful to note that in connection with a a UN request for support for a National Household Survey Capability Programme, Mr. Chenery suggested to Mr. McNamara, in a memorandum dated October 25, 1978, that the Bank not only provides $100,000 in financial support, but also may participate in a benchmark survey along the lines of the World Fertility Survey.

matic study of those who are and may remain in these groups. Finally, the
recommendation is made that the Bank's researchers should make more extensive
use of its opportunity to conduct project-related research.

d. Employment Analysis Review [1]

In April 1978, a report was produced in the Bank that reviewed the
treatment of employment issues in the Bank's country economic work. The
report was fairly critical of the scope and quality of coverage of employment-
related issues in country-economic work. Criticism was expressed with regard
to the preoccupation with descriptive detail based on statistical tables, and
the lack of emphasis on analytic issues. In particular, insufficient analysis
of the functioning of the labor market was noted, although it was recognized
that such analysis may be time-consuming.

It may be argued that our understanding of the functioning of labor
markets in developing countries is not sufficiently advanced to permit adequate
coverage under the circumstances under which routine country-economic reports
are produced. At best, the special employment reports may be expected to
provide the level of coverage that more or less reflects the state-of-the-art,
but even most of these are criticized on various grounds.

Although the Report contains many sensible suggestions as to how one
might improve the analysis of employment related issues in the Bank's country-

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[1] Op. cit. p. 2.

economic reports, it is not obvious to what extent its recommendations take adequate account of the resource and time constraints. Under the circumstances, it would appear more prudent to argue that in-depth analysis of the functioning of labor markets in developing countries is still in the research phase. It is not until the stage is reached that substantive generalizations in this field appear justified that qualitative improvements in routine coverage can be expected. This applies as much to economy-wide, as to specifically urban coverage.

e. Industry and Trade Steering Group 1/

To help focus discussions by the Industry and Trade Steering Group, a paper was prepared that listed topical areas that merit priority treatment for research. Among these are several that deserve highlighting in this context.

The first general area in which it is felt that the Bank should undertake more research is that of employment enhancement through industrial development. Specifically, research should be undertaken that has as its objective improved methods of measuring or enhancing direct and indirect employment through industrial investment, or that bears on the choice of industrial sub-sector priorities, or that affect the design of projects. Moreover, it is considered desirable that the employment aspects of small and medium-scale enterprises are more thoroughly studied, paying attention to institutional support systems for such enterprises that appear efficient, for technology, management, marketing, export promotion, product design, as well as various kinds of finance.

1/ Op. cit. p. 2.

The second general area for research mentioned is that of industry studies and the development of the technological base. The engineering industries are singled out for priority treatment because "they tend to be efficient at small-scale; they tend to be labor intensive; the demand is highly income-elastic; they have strong backward and forward linkages; there are definite export possibilities; and they are the normal "carrier" for technological change." More generally, it is felt that we have inadequate knowledge of technological capabilities and short-comings in developing countries.

Several other priority areas for industrial research are identified in this report, but they appear to be of lesser direct relevance to the subject of urban poverty _per se_.

f. Recapitulation: The Demand for Research

While covering a very wide range of topics for research, the fore-going brief summaries of recently articulated needs for research in the area of urban poverty reveal that several major themes predominate. First, there appears a widely-felt need for the Bank to be more deeply involved in descript-ive-analytic work related to urban poverty. Such research would entail both measurement and conceptual aspects, and be designed to be directly helpful in the formulation of appropriate programs and projects.

A second main area of concern is that of the creation of productive employment opportunities. Here, research needs range from a better understanding of the functioning of urban labor markets, to an improved framework for economy-wide analysis of policy options for employment creation, to project-

related research of employment impacts. Research focused explicitly on the structure of industry, and in particular on the potential role of small and medium scale enterprises in enhancing the employment impact of industrial investment, is generally given high priority.

A third main concern is with our lack of understanding as to how cities function. In particular, the Action Program and the urban research agenda attach high priority to a research effort focused on a single city, with as ultimate objective an analytic framework to test alternative policy options for poverty alleviation, but also as a basis for the design of coherent investment programs for the provision of basic urban services.

Although several other topical areas for research were identified, the three areas mentioned above constitute the main themes, under which virtually all research needs can be classified.

The Supply of Research

We shall discuss the supply of research in correspondence with the three main themes identified above.

Research on measurement and conceptual aspects of urban poverty has so far mainly taken place in the framework of the Bank's research program on income distribution, and was mostly organized independently of the Urban Poverty Program. Nevertheless, several undertakings have a clear relevance here. In particular, a project on urban income distribution in Latin America was designed to develop criteria for identifying poverty groups and compares the empirical results by using alternative criteria, such as income, consumption and estimated permanent income. Similarly, a project focused on an evaluation of Latin American and Asian data on income distribution was primarily designed to improve the data base for systematic analysis of distributional problems. Other than these research undertakings, most ongoing work on the measurement

of urban poverty takes place in the framework of country-economic reporting,
and in connection with specific projects.

A major research effort is being developed focused on the trends
and structure of wages and employment in developing countries. This research
effort, which will be fairly aggregate in nature and emphasize comparative
country experience, has several components. First, the research would seek to
establish a better and more comprehensive empirical assessment of aggregative
trends in employment, unemployment, real wages and labor income in developing
countries. A second component would be a comparative investigation of wage
relationships between major economic sectors and their changes over time.
While these first two objectives are primarily concerned with improving our
empirical knowledge, the underlying objective is to improve upon available
techniques for incorporating employment related concerns into the Bank's
economic, sector, and project work. This would require research that leads
to a better analytic and empirical understanding of wage determination and
labor allocation processes in developing countries which can be applied in
the formulation of proto-type models of the labor market; to this end, several
detailed country studies are planned. Finally, a fourth component is the
analysis of the variety of wage and employment policies, legislative regula-
tions and labor market institutions which exist or have been proposed in
developing countries as means of achieving employment and income distribution.
As ongoing research is being completed, this program of work is expected to
gradually absorb one-half of the staff of the Employment and Rural Development
Division of DED. The collaboration of ILO and of counterparts in developing
countries will be sought.

A considerable amount of research is focused on the functioning
of labor markets, and to a large extent is responsive to identified research
needs. A study of the labor market in Malaysia has just been completed;
measured rates of unemployment in that country are the highest in Asia.

The study explored the nature and cause of unemployment, and
analyzed other aspects of labor market behavior such as income differentials
and participation rates. The final report is presently being prepared for
publication. Another project has focused on the structure of urban labor
markets in Latin America using Peru and Colombia as case studies. This project
attempts to identify the structural and behavioral features that underlie wage
differentials and employment changes. The procedure combines the analysis of
aggregate employment and wage data with informal interviewing in particular
labor markets. Field work has been completed and final reports are expected
by the end of 1978. Proposals for further work on labor markets in Latin
America will be embedded in the broad-based research program outlined above.

The articulated need for more research focused on industrial
structure, usually taking the form of requests for research on small and
medium scale enterprises, has led to the organization of a comparative study
of the development of small-scale enterprise in selected countries--the
Philippines, Colombia, India, Korea, Taiwan, Japan, and two African countries
(still to be identified). The broad aim is to improve our understanding of
the patterns of output, employment and earnings opportunities in small
enterprises, and of how these are affected by a range of policies--credit,
technical assistance, infrastructural and tax, pricing and interest rate
policies. How output, employment and earnings are (or might) be affected by

increased labor intensity in the "modern" industrial sector and by export promotion efforts are also issues to be considered.

The research has four elements:

(i)   A review of the literature, which is by now voluminous and of other work being done in this area;

(ii)   Analysis of census and other published data in the countries mentioned with a view to obtaining historical urban-rural and regional contrasts in the structure of output and employment in small, medium and large enterprises;

(iii)   Interviews in three countries (Philippines, India and Colombia) with about 500 enterprises to obtain first-hand material on enterprise origins and growth, markets, capital structure, skill-acquisition and access to credit and technical assistance;

(iv)   Some evaluation of on-going policies.

This research project is designed to lead to improvements in the formulation of policies that promote efficient, small-scale industry development.

Closely connected to this research project, but carried out as a separate undertaking, is research focused on capital market imperfections in developing countries, with specific emphasis on the discriminatory effect of current credit and interest policies in many developing countries on small scale enterprise development.

Several research projects in the industrial field are directly relevant to the urban employment problem. A substantial proportion of the

Bank's industrial research effort is focused on technology issues. One study is concerned with the scope for capital-labor substitution in the mechanical engineering sector. The central question in this project is the design of employment intensive development strategies, viz. the degree of substitution that is technologically possible in the production of individually specified products. The project also examines the impact of government policies on technological choice.

Another project concerned with appropriate technology is a piece of survey research intended to determine what is now concretely known about the scope for increasing employment through the choice of appropriate techniques embodied in currently manufactured equipment, to identify the producers of such equipment and to evaluate policy options for stimulating the greater use of more appropriate equipment.

Research on industrial technology is beginning to have an operational pay-off. In response to a request to review the technology component of a proposed integrated textile factory to be located at Morogoro, Tanzania, DED staff entered into a useful dialogue with staff of the Industrial Projects Department. The major issues raised were the following. (1) Whether a search for different vendors of equipment could result in a reduction of the cost of equipment per job created. (2) Are the engineering specifications about probable performance likely to be useful guides to actual performance in the context of a country such as Tanzania. If not, how does operating inefficiency that does occur alter the evaluation of appropriate equipment. (3) Would it be possible to alter the organization of the textile sector so that a larger number of companies could undertake efficient production. These smaller

companies might be able to affect economies in the non-hardware costs which loom so large in many projects in the poorest countries.

To address these problems systematically an economist and two textile engineers are currently examining the range of textile equipment currently available on the world market, including that produced by such countries as India and S. Korea, as well as its economic efficiency in a variety of country contexts; the sources of operating inefficiency and its magnitude in a number of the poorest LDCs; and, various options as to the organization of the textile sector and its implications for the cost of creating jobs as well as economic efficiency.

Also, in direct response to the Action Program, a study was begun of a specific city, i.e., Bogota, Colombia, with the objective of improving our understanding of how a city economy functions. The principal objective of the study is to develop tools that can be used to estimate the spatial and economic impacts of policy interventions in the planning, development and evaluation of projects. To this end, the study intends to text existing tools, designed primarily in developed countries, in cities of the developing world and, if necessary, to develop new ones. Five components of the urban economy are identified: housing, transportation, employment location, labor force, and the public sector. Within each of the five categories, three major research tasks will be carried out. First, the study will provide a systematic description of the current state and recent changes in the city economy and its spatial patterns. A very large survey is being carried out with the Government's Statistical Office, DANE, that places heavy emphasis on employment.

Second, it will provide estimates of behavioral parameters that will permit simple policy impact analysis. Finally, these parameter estimates will be incorporated into sectoral and cross-sectoral models that will be used to carry out hypothetical analyses of policy impacts. It is hoped that the project will provide transferable tools of analysis for urban project work in other LDC cities.

The project is scheduled to be completed by June, 1979, and is proceeding according to schedule. It involves research staff at headquarters as well as a large counterpart research team in Colombia. Progress on the project is not only monitored by a Steering Committee in the Bank, but also by a high-level Colombian Advisory Group.

Finally, it may be appropriate to refer in this context to the monitoring and evaluation effort in which research staff is currently involved with respect to basic urbanization projects. Specifically in El Salvador, Senegal, and Zambia attempts are being made to measure the impact of various project components, such as credit provision, and self help programs, on urban population groups. Comparison of actual impact with original project objectives provides insights that can be expected to have an immediate pay-off in terms of project design and appraisal.

Evaluation

All statements relating to the urban research needs of the Bank
stress the desirability of a research program that is "operationally relevant"
or has the promise of an "early operational pay-off". At the same time, it
is not always clear what the precise meaning of these terms is. In the case
of urban research, it would appear that the Bank's current research program
is reasonably responsive to the articulated requirements of the Urban Poverty
Program, and in that sense can be qualified as operationally relevant.
Unfortunately, many of the issues that have been identified as important
concerns to the Bank as well as to the developing countries require a rather
sustained research effort before a desirable level of understanding is
reached. It may therefore be more appropriate to make a distinction between
research which can be expected to yield useful results in the short-run as
opposed to research than is likely to do so in the medium to long term only,
and to evaluate the research program in terms of the proper mix between short
term and long term research. However, it should be realized that such an
evaluation focuses on the choice of issues to be researched rather than on
the mode of research.

Against this background, it may be argued that the Bank's urban
research needs are dominated by issues and problem areas that require rather
longer term research efforts. This is reflected in the research program.
Most of the major themes under investigation are programmed to involve 2-3
man-years over several years, as follows:

Labor markets, wages and employment	3 man-years
Small scale enterprises	3 man-years
Credit mechanisms and policies	2 man-years
Industrial technology	2 man-years
City Study	3 man-years

In addition, about one man-year per year of research staff is devoted to the monitoring and evaluation of urban projects.

For all practical purposes, the numbers represent a minimum critical mass of internal staff associated with the first five themes - invariably, considerable financial resources for outside support by individuals and institutions is needed. For example, the City Study of Bogota involves more than 20 part-time and full-time consultants, half of them Colombians, and two local institutions. In the case of the monitoring and evaluation effort, it would appear that a good case can be made for an expansion of the research effort.

Although several research themes have been part of the research program for some time, most of the research projects discussed here were undertaken in response to recent changes in the lending program of the Bank. As most of the research projects will take two to three years for completion, the implication is that in the short run, given resource constraints, the flexibility of the program is very limited. Unless particular themes are considered to be of relatively low priority, it would not appear possible to change the coverage of the research program in the near future. It is only as ongoing research is completed that new areas of work can be accommodated.

This is unfortunate, as it should be noted that several areas of research do not now receive adequate attention, or, in some cases, any at all. To the extent possible, outside consultants are used to produce papers on specific subjects. For example, two papers were produced on the direct and indirect employment effects of industrial investments, by a consultant. Similarly, research on the role of informal credit markets is conducted in this manner. However, there are a number of important areas where this mode of research is unlikely to be effective--for example, where the need is felt to take greater advantage of the possibilities for research that is directly related to the Bank's project work.

The suggestion that the research program of the Bank should have a major component that takes advantage of the possibilities for research offered by the Bank's project experience has only had limited response. One example is the work on textile technology mentioned earlier. Also, in connection with a companion paper to the present one--on the use of the capital/labor ratio in project identification and classification--temporary staff is being employed to investigate this concept's usefulness on the basis of a sample of recent Bank projects. The research project on small-scale enterprises, particularly the component dealing with the Philippines, is directly concerned with Bank projects. Finally, the monitoring and evaluation effort of sites and services projects has a research content that should lead to improved project formulation.

Although, therefore, a certain amount of project-related research is carried out in the Bank (and the above statement is not exhaustive), it would appear that the total effort is modest, and rather ad hoc. A more systematic examination of the scope for project-related research is clearly

desirable. A possible approach to designing such a research program might be the organization, on an experimental basis, of a small task force composed of staff from DPS as well as CPS, to look into the scope for project-related research. Initially, such a task force might deal with one specific sector such as urban projects; if successful, however, a similar effort may be warranted for other sectors as well.

Too little attention is currently also being given to research that attempts to learn from past experience in the design, implementation and operation of projects, programs and policies that were designed to alleviate poverty. Although again a strong case can be made that ideally internal staff should play a major role in such comparative research, it is clear that research by appropriate consultants is to be preferred to none at all.

Finally, and probably most importantly, the research staff in the Bank has not so far taken up the suggestion to formulate a systematic research program that is explicitly designed to provide the analytic framework that permits the testing of alternative sets of policy options, at an economy-wide as well as at the sectoral level, to enhance productive employment creation. There may, however, be good reason for this lack of responsiveness. Given our current state of knowledge, there is a strict limit to what can be said on this subject at the macro-level, and whatever can be said usefully is being repeated many times over. What is lacking is a detailed appreciation of the issues bearing on this subject at the micro-level. This applies to research on small-scale enterprises, industrial technology, labor markets, as well as to the urban research program. While this research orientation may make sense, it leads to problems on the demand side as the

case studies do not often produce directly usable results, for two reasons. First, the research may <u>in the first instance</u> not be directly concerned with policy. Second, the generalizability of the case study results may yet have to be demonstrated. As the current research program is progressing, it will be necessary to monitor carefully to what extent the research results can eventually be expected to be generalizable, and to lead to insights that will permit improvements in policy formulation.

<u>Next Steps</u>

Given resource constraints, there is little that can be done in the short run to fill the gaps that have been identified. Research staff associated with urban poverty related research has generally been responsive to the longer term research needs identified in a variety of relevant reports. Although these research efforts will yield operationally useful insights as the work progresses, in all cases completion of the projects is at least 1-2 years away.

Unless research resources are diverted from other areas of concern[1], it is primarily the research on issues with a likely short term operational pay-off that receives inadequate attention. It is suggested that a task force be organized of CPS/DPS staff to identify researchable issues, to begin with in the urban area, but with the possibility of an extension to other areas in the future.

Thought may also be given to the establishment of a Bank-wide Steering Group for urban poverty related research, along the lines of the Trade and Industry Steering Group. The present report may give the impression

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1/ With several external research reviews underway, relative priorities in the research program being a major concern, the timing for such a recommendation would not be particularly fortunate.

that there is a "program" of research on urban poverty in the Bank. This, however, is not the case. What has been described here is a number of individual research undertakings, each involving several researchers; few of these have a good overview of the entire effort. The most important task of the Steering Group would be to monitor progress, establish priorities, and ensure coordination among individual research undertakings.

To: Gerardo Bueno and Members of the Research Evaluation Committee

From: Richard Nelson

Subject: Your draft on bank research on "small enterprises, credit markets, and public institutions".

I like your draft. I have the following relatively modest suggestions.

I think we ought to elaborate a little bit your discussion under Item 7 and 8 about differences of opinion regarding the project 670-77. On the one hand, as I read what came out of that project I see a perfectly reasonable and useful disstellation of wisdom that might be useful to practitioners. On the other hand, I see analysis of great intellectual shallowness, with no significant effort being made to really understand the problems. I can see why some of the practitioners liked what came out of the project. But one also can see and agree with the research community at the bank that the project was at a dead end. In order to make further progress one had to start out in a quite different way, and do some hard conceptualizing as well as data gathering. If we make these kinds of points, we then can go on to make the general point that reinforce by these specifics the bank research portfolio ought to contain both kinds of projects - both those aimed at informing the community of practitioners, and those aimed at advancing understanding in some significant way.

My second suggestion is that we note that some of the more interesting of the studies being done under these projects are tending to view development as a dynamic process involving innovation, imitation, learning, competition in the sense of Schumpeter, rather than as a moving competitive equilibrium. The former view carries very different implications regarding the role of financial institutions, mechanisms for channeling information, etc., than does the latter. I think we want strongly to reinforce that the view that recognizes the dynamic disequilibrium aspects of growth is the right headed view. I think we also ought to remark that the research has been somewhat timid about taking an explicitly evolutionary position. For example, there is precious little one can

find in the reports that even recognize that today small firms might also

have been small yesterday, they might have not been around yesterday, or

they might have been bigger yesterday. The growth and decline of firm size

is an essential aspect of dynamic process. The research report show little

awareness of the literature on this.

Finally, I think we ought to remark that this growing recognition

of the importance of innovation, and dynamic competition in the growth

process revealed in these projects is quite constentent with complimentary

developments and other arenas. For example, I note the same intellectual

develepment in bank work related to capital labor substitution and choice of

technique.

To: Assar Lindbeck and Members of the Reveiw Committee

From: Richard Nelson

Subject: The draft of chapter one.

I like the draft of Chapter One very much. I have the following suggestions.

I don't think I fully agree with the statement regarding the emphasis of bank research on the top of Page 2. It seems to be in particular for a long time the bank has been doing substantial amount of work in the Field 6. On the other hand I am not impressed by the scope of the work under Field 2. I do agree that only recently has the bank seriously   gotten into Field 5. I suggest that we rethink that paragraph.

On Page 4 in the discussion of sectorial planning, shouldn't we make an explicit statement that in many of the less developed countries a number of key sectors are in fact under relatively detailed governmental control. (I grant it a complicated question to identify exactly where that control resides.) Thus planning models are directly relevant to these sectors.

I find something strangely missing in the listing of broad developmental philosophies; an explicit articulation that one can view the bulk of the development process as being guided by decentralized units motivated by profit and stimulated and constrained by markets. Shouldn't we have a paragraph that says that explicitly at the top of Page 5?

At the bottom of Page 7 I think a phrase can be added noting that the bank work on production functions and the range of technical choice has been strongly influenced by the interests of Westhal.   This remark is consentent with my earlier one that this field long has been an important area of bank research.

On Page 11 in the paragraph on "externalities" I think we should remark that the practioners in the bank surely need to be aware, at least dimly, about what the world of research generally, not merely research at the bank, is doing. About the only way for practioners in an organization to stay broadly aware of what researchers are doing is to have a number of researchers in their organization.

I propose that in the opening sentence of the last paragraph of Page 12 you list the "four principles". The reader may not have the four in mind.

On Page 14 we might want to distinguish between two options: having people with research backgrounds more or less permanently in operating positions, and having people with such backgrounds occasionally in operating positions. My conjecture is that the latter policy is much more plausible.

While I agree with everything that is said on the top of Page 15, the field of industrial organization is generally is understood to include considerations of "competition and entry", so those words are redundant. If you wanted to elaborate the notion a bit you might say things like "with a particular interest in topics like the effect of regulation and protection on performance."

In the bottom paragraph of Page 16 and the second paragraph on Page 18 we might make use of the term "bridge people" to refer to the role of researchers in an operating agency   serving as an intellectual bridge between the world of scholarship and world of action.

I don't like the first part of the opening sentence under Topic 4 on Page 18. My experience is that it is not very useful to try to solicit lots of suggestions for research from "applied people". What is useful is for the researchers to try to understand what the applied people really need to know.

On Page 22, and adjacent pages, I worry about the way the term "market imperfections" is used. It seems to carry the connotation that

the world basically comes equipped with "perfect markets" but there are a few imperfections around that one ought to note. For myself, I doubt if there is now or ever has been any thing like a "perfect market". All markets are flawed institutions. This implies that it is silly to model the economy as if there were lots of perfect markets, and rather dangerous to take a panglossium position with respect to markets in general. The main reason that one should be cautious about regulating markets or nationalizing things or otherwise mucking around in microeconomic activity is that such policies, unless carefully choosen and carried out, have about as much chance of making things worse as they do of making things better. Don't we want to say something like that straight out rather than using the rather lame "market imperfections" language?

On Pages 23 and 24 I think we ought to say something like the following. Practial people always have known, and theoretically trained economists now are beginning to understand, that economic development is a dynamic disequilibrium process. It can't be characterized as a moving competitive equilibrium in which changes results from augmentation of factor supplies. What is driving the system is innovation, imitation, learning, competition in the sense of Schumpeter not in the sense of price theory textbooks. Research at the bank increasingly is coming to realize this. If one views the development process in such a way, one also sees the requirements on institutional structures, the role of markets in competition, and a variety of other features on the economic landscape in a quite different way than did orthodoxy of the 1950s and 1960s. The bank is beginning to adopt this vision. We think they are clear visioned and we want to reinforce them in their new articulation of growth as a dynamic process.

EVALUATION OF BANK RESEARCH ON INDUSTRY AND TRADE

Small Enterprises; Credit Markets; Public Enterprises

Introduction

1.- The following discussion treats each one of these in a se-
parate manner, although it could be argued that the diffe-
rent subjects are, in some sense, interrelated. It rests
on the analysis of five RPO project and two non-RPO pro-
jects, which are detailed in Annex I, as well as in other
relevant documents.

2.- The themes are important for the Bank from the operational
angle. These themes appear also in the fora of discus-
sions and, in particular, within the LDC's, where it seems
important to have a better understanding of the problems
involved for policy formulation. The progress in the re-
search done in these areas by the Bank will allow it to in
crease its capacity to give meaningful and relevant recom-
mendations for policy.

3.- Undoubtedly, the quality of the research effort done in
these areas by the Bank is high in general. However, this
is not so in all cases and, to a certain extent, this can
be attributed to a common factor which should be mentioned.
All of them are relatively "new" fields of research in the
Bank. This means, of course, that here the Bank has not
yet either the experience or the influence on policy recom
mendations that it has gained in other research areas. Fur
thermore, a large part of the projects have not been fi-
nished and, in some cases, they are still at the concep-
tual stage. In spite of this, in my opinion, the Bank has
managed not only to avoid possible duplication of efforts
vis a vis other institutions and researchers but also, and
more importantly, to open new avenues for promising re-
search. Nevertheless, to materialize these possibilities
and to have a more solid base for policy recommendations
it will also be necessary for the Bank to consider an in-
tensification of its research efforts in these fields.

Small Enterprises

4.- The research on the small enterprises area has been to a large extent the result of a growing interest in the Bank in these questions at the policy formulation and the operative levels. Not only one finds a sectorial policy paper (Employment and Development of Small Enterprises) but also the subject is frequently referred to in the latest Bank's annual reports and in the President's addresses to the Board of Governors. Accordingly, and although the subject does not fall squarely within the Bank's traditional lines of research the decision was taken to support it. This appears to be, thus, one instance in which the operative and policy formulation needs determined to a large extent the opening of new lines of research.

5.- In other parts also, the subject is very much in vogue on account of the relations that seem to exist between SES development and the growth of employment among other things. SES have become fashionable not only in international and regional organisations but also on the national level on both, developed and underdeveloped countries. However, it can be validly affirmed that up to now this interest has manifested itself mainly through the formulation of programmes to support SES and in the adoption of several specific measures to that effect; on the other hand, little has been done yet in terms of policy formulation in the context of a global strategy. In short, the emphasis has been placed more on action than on reflexion. Research on the other hand, has tended to be a descriptive and general character and, to a certain extent, repetitive. The approach taken by the Bank is more original and appears to be more promising.

6.- Research by the bank in this area started with the RPO 670-77 project (Financing of Small Scale Industries); in addition there were two other non-RPO project on Brasil and one in Malaysia. The two non RPO project on Brasil are econometric research of a good quality whose main conclusions were

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The Bank's position in relation to these questions is summarized in its latest annual report: "The Bank has found that the benefits of the growth cannot be assumed to "trickle down" automatically; to ensure that development benefits the poorest it must be deliverately directed to the poorest ---(thus)--- financing for industrial development (should) shift towards small scale enterprises".

that the SES sector had lost in relative importance and
that new SES had tended to concentrate in the growth po-
les of the South East Brasil. Therefore, recommended
(something that the Braziliens were already doing) the
formulation of support programmes for SES giving special
attention to its geographical distribution. The conclu-
sions, as can be seen, were not particularly different
from those reached in similar studies.

7.- The RPO Project 670-77, has perhaps the peculiar characte
ristic of being the sole research project by the Bank
whose cost was only 50% of the figure originally envisaged
(37,500 dollars vs. 75,000). Besides this anecdotary as-
pect, it may be mentioned that it was the first time that
the Bank aimed to have an overall view on the importance of
SES in different economies. The results of project were
afterwards discussed in the Bank and what was maybe more inte
resting to point out are the reactions that took place. In
the opinion of some, particularly at the regional level, the
studies were found interesting and useful and therefore a
recommendation followed to increase research on these ques-
tions; other people, however thought it a waste of time and
considered that a "2-4 days meeting would have been prefera
ble" to that research project.

8.- Adequatedly, however, the follow up of this was RPO project
671-59 (Small Scale Enterprise Development) The formulation
of the project owes much to Prof. Ian Little, as well as to
D. Anderson and L. Westphal, and to their insatisfaction
with the type of research that was being done; and, in par-
ticular with the absence of ways and means that would allow
one to evaluate different policy alternatives. The project
has two main objectives. On the one hand, a review of the
existing information and literature on small enterprises in
developing countries, and through trial surveys, attempt to
define ways in which the information can be improved. The
other which should be the most interesting at medium term,
is to develop a basis for assessin the impact on income and
employment of various policy options and attempt to estima-
te the costs and benefits of various policies towards small
enterprises. For this last part the Bank seems particular-
ly well equipped taking into consideration its vast expe-
rience in this area.

9.- The first phase of the project which is the responsibility
of Mr. D. Anderson covers a review of the literature as
well as case studies and enterprise surveys. The case
studies will cover India, Colombia, Philipines, Japan, Ko-
rea, Taiwan, Nigeria, and the enterprise survey India and
Colombia. From this point of view, one could say that the

the investigation has a good approach and that it will con
tribute to diffusion of the knowledge through the partici-
pation of researchers from the developping countries. How
ever, in my opinion it would have been desirable to inclu-
de a larger number of countries taking advantage of the in
creasing interest on the subject. It is true that later
on some difficulties could have arisen in regards to data
handling, but it seem also true that the advantages would
have been superior.

10.- RPO 671-59 was started in November 77 and the first phase
if expected to be finished in September 79. Two papers
have already been produced, one by D. Anderson and the
other by Ms. Cortes. The latter in fact constitutes a propo
sal for a specific investigation on the relations between the
technology factor and the small enterprise and the other
is an attempt to formulate a methodology to estimate the
economic benefits of small scale enterprises credit pro-
ject. Both are well conceived and make interesting metho-
dological contributions. In my opinion the paper by Ms.
Cortes discusses an important problem which seems to have
been left on the side on the actual work done in the pro-
ject. However, it is a key problem about which it is ne-
cessary to do much more research that has been done in the
past. As it concerns, specifically the role of the technolo-
gy factor in the development of SES, for this purpose it
would be required the participation in the project of techno
logical research institution. The paper by D. Anderson pre-
sents the difficulties that SES face in financing. It intro
duces working hypothesis some of which, if confirmed, could
have a significant impact in the setting up of "financial faci
lities" for SES in a large number of countries.

11.- In conclussion, although a lot of work remains to be done
and therefore 671-59 cannot be adequately evaluated at this
stage, the research done so far, the competence shown and
the original approach taken, leads one to think that it
will be succesfully completed and that it will be useful
both for the Bank and for LDC's. However, there are at
least three problems that we should mention. First, is
that the number of participating researchers is very small
in comparison with the aims of the project or less signifi-
cant projects. Second, but which in any case seems to be
the rule and not the exception, that the support given to
the project by the operating areas has been very reduced.
Personnel originally adscribed to it have gone back to
their Departments. And finally, in spite seeming reitera-
tive, that the opportunities for external collaborations
appear to be ampler than those envisaged in the original
formulation of the project.

Credit Markets

12.- In this area we find two RPO's one of them (671-65) on "Small Enterprise Financing" and the other (671-64) on "Market Imperfections and Economic Developments" both of them under the responsibility of the Public and Private Finance Division. The discussion that follows also took in consideration a paper prepared by this Division (Domestic Finance Studies number 43) presentinf its research program.

13.- RPO 671-65 does not count, as yet, with any paper. We have therefore, only a research proposal to study the role of informal credit markets. The project is justified on the basis of the importance of those informal credit mechanisms for financing small enterprises and trade in various Asian and African countries. It is suggested that the studies could serve to ascertain whether the real cost of lending in this markets is significantly lower than in the formal financial market and if it is possible to establish some sort of a link between the two.

14.- A pilot study has been initiated which focuses on "a significant element of the informal credit markets in India, namely the Shroffis". The Shroffis are (indigenous style bankers that extend and create credit through the issue of hundis as well as other credit instrument). Be that as it may, there are non the less certain questions that arise in relation with this project and for which there don't seem to be sufficient answer as yet on the research proposal. Perhaps this may be due to the lack of time to dwelve more thoroughly on this matters but nevertheless, it is convenient to state at least a few of these questions. One of them, of course has to be with the fact that we are left in the dark about the significance of these mechanismes from the point of view of financing and allocation of resources. The second would concern the significance of these questions for the normative aspects of the operations of the Bank, and so forth. Without aiming to cast doubts on the validity of this research proposal -which in fact did not received an overwhelming support in the bank- the point that we would like to make here is that special care should be excercised in formulating research in these "new" fields of research in the bank; least they may be rapidly abandonned in favor of more "proved" lines.

15.- RPO 671-69 on capital markets imperfections and economy developments always match to the formulations of Dr. Sen and to previous work that was done in the Division itself. The

project was iniciated in January 78 and it is expected
that the final report will be finished by March 79. Va-
rious papers have allready been produced. One by V. Bhatt-
who is overall responsible for the project - on"Interest
Rule, Transactions Costs and Financial Innovations".
Other by Alan Roe on "Some Theory of the Financial Interme-
diation in Developed Countries" and one by K.Anderson Saito and
D.P. Villanueva on "Portfolio Determinant of Commercial Bank
Earnings in Selected Asian Countries". These sere followed
by A. Roe on "Financial Intermediation and Economic Develop-
ments: An Empirical investigation" and wich should be consi-
dered as a sister paper to his early one. The output, thus,
has not been a negligible one at all.

16.- In the development of the project three types of preocupa-
tions are clearly discernible. The first one is with the
need that was felt to make an examination of the impact that
transaction costs have in lending as well as in borrowing in
different markets. This is a subject in wich there are ob-
vious gaps in the literature and in particular in relation
with the financial systems of LDC's . The second reponds
to the preocupation of the possible effects that banking re-
gulations in LDC's may have on the banking structure and in
the long run financial viability of the banks. The third one
concerns the need to have a model that would express the pos-
sible interaction between the development of capital markets
and general economic development. These will be briefly exa-
mined in reverse order.

17.- The third subject of research is covered by the two papers
presented by A. Roe. The first one presents a general model
and the second attempts an empirical verification of some the
issues raised in the first one. But the latter, in fact,
is more than an extension of the former. Their aim is to bet-
ter understand the role that financial intermediation plays
in the development process as well as an identification of
the factors which limit its effectiveness and the benefits
which may accrue from improving it. This was justified on the
other hand by the fact -which seems a valid one- that economic
analysis in the past has generated "neither a body of reasona-
bly rigorous theory nor a wealth of credible economic results"

18.- The central argument of the model, which seems adequatly
proven, is that for a given production function and state of
non financial technology there is a role to be played by fi-
nancial intermediaries channelling resources from low to
high return sectors thereby raising the agregate marginal pro
ductivity of capital. The limits on this role have been de-
fined at one end by the overall rate of return which would
prevail in the absence of financial institutions and, at the

other, by the rate which would prevail when capital markets are perfect.

19.- Together with the presentation of the model the papers include a relatively thorough review of the existing literature and, as mentioned above, an empirical verification of a limited version of the model. In spite of data problems for most of the 19 countries included in the sample some conclusions seem important for the operations of the Bank and in particular in its role as finantial advisor to the LDC's. However, it is obvious that further work will have to be done in the future. One obvious need concerns the nature of the data and also further examination of the results provided by the model. One possible approach could be to take countries not based solely on geographical considerations but taking also into account their level of development and the structure of their economies.

20.- The paper by Anderson S. and Villanueva examines the relationship between earnings and portfolio of the commercial banks of three Asian Countries: Philippines, Thailand and Singapore. The technique used was that of statistical cost accounting and followed with some variations the methodology previously used by Hester and Zoellner. As in other cases the research was also justified on the grounds that analysis of this type are scant in developping countries.

21.- The investigation is well conducted and the conclusions are interesting in that both, the rate of return on loans and administrative costs seem to be positively correlated with the degree of regulation in banking operations. The lowest figures correspond to Singapore which of the countries examined is the one that presents the more competitive financial market and is the less regulated. This is an analysis that undoubtedly, can be further refined and extended to a larger number of countries although we should mention data problems in several cases will prove to be quite significant.

22.- The paper by V.V. Bhatt on the relations between interest rate and transaction costs is an interesting one and developed with technical competence. It raises a valid point in calling attention to the importance of transaction costs for the borrower and the lender and thus, in a certain sense, to the need to innovate in the process of financial intermediation. However, it is not clear yet, the significance of this factor alone. The study previously referred to on banking in the Philippines, Thailand and

Singapore estimated the administrative costs of lending
at 0.1-0.5, 1.4-2.0 and 0.77 percent respectively. It
seems, therefore, that there are other more important fac-
tors to take into consideration.

Public Enterprises

23.- RPO project 671-11 (Managerial Structures and Practices:
Public Manufacturing Enterprises), is up to now the only
research project by the Bank on this area. It started on
March 78 and it is expected that the final report will be
submitted in January 1980. In addition it is also being
considered in a certain sense as an extension of some pre
vious work and in particular reconnaisance missions that
were previously made to Egipt, India and Yugoslavia. As
yet, the only report available is a case study of a pu-
blic enterprise: India's Swaraj Tractor.

24.- The research proposes to examine a set of hypothesis which
it is said, "are best described by the general proposition
that the performance of public manufacturing enterprises
is dependent upon their organizational and managerial
structures and practices as well as the policy environment
within which they operate". It is justified on the basis
of the fact that a large part of the lending operations of
the Bank concern public enterprises and that they are a
growing sector in LDC's industries. And, in addition, a
type of enterprises about which not much is known and
where in general, little research has been done.

25.- As mentioned before, the only report available up to now,
is on the Swaraj tractor plant in India. The report is
quite interesting but does not allow one either to evalua
te the overall approach taken by the Bank on this ques-
tion or to reach some type of conclusions. Therefore, it
will only be pointed out here the significance that indi-
genous technical developments had in the shaping and ulte-
rior growth of this plant. This can be related to what
was mentioned above on the importance of the technology
factor for on small enterprises development.

General Conclusions

(To be drafted)

PROGRAMMING IN THE MANUFACTURING SECTOR[1]/

RPO 670-24

Introduction

This note is a brief synopsis of history, objectives, achievements, failures, and issues for the future, relating to research project RPO 670-24, Programming in the Manufacturing Sector. Given the need for brevity, this note cannot do full justice to any of the above aspects. The main purpose is not to provide the full background for an _ex post_ evaluation, but to convey a sense for the potential of this line of work in and outside the Bank, and to generate a discussion on where to go from here.

Background

The project was begun in late 1970, initially exclusively by consultants, by the (then) Basic Research Center, as an independent component of the Center's work program focused on the importance of interdependence in economic analysis. Specifically, the project was to address the question of interdependence within the industrial sector, taking the existence of economies of scale explicitly into account.

At the time the research was begun, several contributions to the literature had established that, in principle, techniques could be designed that enabled the analyst to incorporate the phenomenon of economies of scale into sectoral investment analysis. These contributions demonstrated that the technique of mixed-integer programming could be employed successfully

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1/ This review has benefitted from comments and suggestions made by
    members of the Trade and Industry Steering Group.

to quantify the impact of economies of scale on the design of an investment program.[1/] However, the case-studies mostly focused on highly aggregated industrial activities, placed in the context of greatly simplified representations of reality, and were not designed to yield operationally useful results. Even then, they demonstrated that the computational complexity of the available techniques of analysis were enormous: one model took 40 hours of computer time to solve. In light of that experience, it seemed highly unlikely that much further work was soon going to be undertaken in this area in a university environment. This was unfortunate, as these early attempts showed that, at last, an approach had been developed that could lead to the formalization of project identification and sectoral investment analysis in the presence of economies of scale. Under those circumstances, it was felt that a major research effort under World Bank auspices was justified.

Objectives

Initially, the main objective of the research program was to assess the feasibility of quantifying the impact of interdependence, including the effect of economies of scale, in the context of an operationally meaningful specification of an investment problem. As the work progressed, however, and feasibility was clearly demonstrated for various industrial sectors, the

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1/ Mixed-integer programming is a variant of the technique of linear programming, differing from the latter only in the sense that some of the variables must assume integer values, usually zero or one. The integer variables are associated with the investment costs in such a manner that if a plant is built, the corresponding integer variable is forced to assume the value one, thereby activating a fixed charge on plant construction, and to zero if a plant is not built and consequently no investment cost should be incurred.

objective became more ambitious, namely the development of a formal approach to sectoral investment analysis in the industrial sector, taking economies of scale into account, and leading to the design of project-specific investment programs in selected industrual sectors.

A Short History of Progress To Date

The research program started with three studies, following distinct lines of investigation. First, Thomas Vietorisz, in a study of the Mexican heavy electrical equipment industries, investigated the investment problem at the plant level. Second, Larry Westphal, later joined by Yung Rhee, focused their attention on the Korean mechanical engineering industries, and analyzed for 120 carefully selected products within that subsector whether Korea had a comparative cost advantage for domestic production. Third, Charles Frank and Ardy Stoutjesdijk, later joined by Alex Meeraus, formulated a model of the East African fertilizer industry, analyzing future investment possibilities in a multi-product, dynamic and spatially disaggregated framework which, moreover, permitted substitution among final products.

This early effort demonstrated three points. First, some industrial activities lend themselves better to comprehensive investment analysis than others, depending on the degree of homogeneity of products and the complexity of the relevant production technology.[1] Second, the computational problem introduced by economies of scale was quite complex and available solution procedures were far from efficient; without extensive "pre-analysis" of the

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[1] The usual distinction here is between process and non-process industries, where process industries can be defined as those characterized by predominantly single-purpose equipment, and high degree of homogeneity of products used and produced.

investment problem, the models were essentially not solvable at reasonable cost. Third, significant progress in this area was dependent upon a research environment that accommodated an interdisciplinary approach, combining the skills of the economist, the engineer and the computer scientist in an integrated fashion.

The subsequent research effort was influenced by these lessons. Considerable attention was paid throughout to the development of shortcuts, designed to reduce the complexity of the problem, and to the design of more efficient solution procedures and methods of problem specification. An attempt to develop an original solution procedure for this general class of models, by Glen Martin of Control Data, New York, for the Bank, was a failure. However, it led to an internal research project (GAMS, RPO 671-58), under Alex Meeraus' supervision, which is likely to result in substantial software developments.

The realization that some industries require a much greater effort in model development and specification than others led to the formulation of a new research project focused on investment analysis in the so-called non-process industries, i.e., industries that are characterized by multi-purpose equipment and consequent capacity sharing, as well as significant heterogeity of inputs and outputs. Specifically, this project extends the work done on the Korean mechanical engineering industry (M.E. II, RPO 670-23), paying much more detailed attention to the scope for capital-labor substitution at the product and process level. Details of this project, which is still in the research phase, are given in a note by Larry Westphal.[1]

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[1] "Bank Research on Industrial Technoloby", Nov. 22, 1978.

Case Studies

A number of case studies were undertaken, following the original three research efforts, that mainly focused on process industries. Given the familiarity acquired with the fertilizer industry—an essential condition for the specification of a useful model to analyze investments—it seemed natural to test the applicability of the approach in different types of environment in this subsector first. In that vein, case-studies were carried out in Egypt (in collaboration with the Bank's Industrial Projects Department and Egyptian counterparts), ASEAN (at the request of the Consultative Council for Food Production and Investment), Andean Pact (in collaboration with the Andean Pact Secretariat and Inter-American Development Bank), and India (with Industrial Projects Department); in addition, a world-wide model of the fertilizer industry was formulated at the request of IFC, and the results incorporated in a paper presented to the Board.

At the same time that considerable experience was gained with the method in case studies of fertilizer production, the program was expanded in a number of directions. Models were formulated for use in the analysis of investment in the forest industry sector. The first case-study was done in Turkey; following successful application of the models in that context, the approach was used in FAO's World Pulp and Paper Program, and specifically applied to the countries in the ASEAN region. In the process, the methodology was transferred to FAO, where it is now routinely used within the Program.

Encouraged by the feasibility of carrying out country-specific sub-sectoral studies, a research project was designed that was to take the methodology several steps forward, and provide the analytic framework for

the so-called package approach to integration project analysis. This approach, which was described in a joint article with Bela Balassa[1], involves the simultaneous analysis of a number of industrial subsectors in the context of a regional investment agreement among several countries. In this case, West Africa was selected as the environment for the study, which was to focus on steel, fertilizers, pulp and paper, as well as cement. This project was too ambitious. First of all, it became quite clear at an early stage that further model development was required to capture intersectoral linkages, and to intro-duce multi-sector, multi-country budget constraints. Second, the data requirements of the study were not likely to be met unless large investments in data collection were made; neither the Bank nor the countries were likely to do so. Consequently, this project was abandoned at an early stage; no empirical work was carried out in West Africa with the exception of some analysis of the CIMAO clinker project in Togo, at the request of the Industrial Projects Department.

For specific industries, the methodology turned out to be fairly flexible in its application, and in a number of cases the research team was able to respond positively to specific requests. The number of requests for assistance has accelerated in recent years, and at various points in

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[1] Bela Balassa and Ardy Stoutjesdijk, "Economic Integration Among Developing Countries", World Bank Reprint Series: 39.

time, the researchers were involved in a model of clinker production (in Brazil), petrochemicals (Portugal and Mexico), energy (Nigeria), steel and mechanical engineering (Mexico), and chemicals (Turkey). A recent request from Korea concerns assistance in the formulation of investment programs in fertilizers, pulp and paper, and basic metals. Moreover, the method has been successfully applied to world-wide planning of the copper industry and the aluminum sector.

Practical Results

The full application of the methodology developed in this project permits the formulation of investment programs for sets of interdependent industrial activities, taking aspects such as time, location, sizing, technology and product mix explicitly into account. As such, it provides a formal analytic approach to project identification.

One of the major strengths of the method is that it permits a rapid quantification of the impact of alternative project and program designs, and therefore gives the project planner and the decision-maker a much greater insight into the nature of the planning problem and the scope for choice. Moreover, the consistency framework implicit in the model often leads to results that appear at first surprising to the project planner, but, on second thought, are clearly plausible.

The models constitute tools of analysis that contribute insight and quantified information to a decision-process that involves many different inputs. As such, they are aids to decision-making, not black boxes that are

designed to replace it. Thus the practical result that is sought is better informed sectoral investment decision-making, for which the models have been shown to provide highly useful inputs. It is in this vein that the dissemination effort, described below, has been conducted.

Dissemination

Various routes have been taken to disseminate the methodology. The main academic output of the project will be a volume, edited jointly by Ardy Stoutjesdijk and Larry Westphal, entitled Industrial Investment Analysis under Increasing Returns; the volume is currently in the hands of the Bank's Editorial Sub-committee. In addition, a large number of internal reports and several Bank Staff Working Papers have been produced. To disseminate the research results to a more practically oriented audience, a series of manuals is being produced, under the editorship of Alex Meeraus and Ardy Stoutjesdijk. In addition to a volume that provides a comprehensive and self-contained introduction to the methodology of process analysis models, and a User's Guide that presents guidelines on data representation and computer-related aspects, the series contains several sector-specific volumes (fertilizers, pulp and paper, and steel) as well as a volume that demonstrates the use of the method in a common market context. The latter volumes contain case-studies that emphasize the use of the approach in an operational context; the sector specific volumes provide short technical descriptions of the relevant industrial products and processes as well. The general methodology volume will be published before the end of this year; subsequent volumes will appear in 3 to 4 month intervals.

In addition to the written output, other dissemination devices are being used. Workshops have been held in and outside the Bank. Among the latter was one organized jointly with the OECD, and hosted by the Yugoslav Government in Portoroz; it was attended by over 150 representatives from OECD countries. Furthermore, as a rule, seminars and work shops are given in connection with case-studies (e.g., Egypt, India, Andean Pact). Finally, in this context, presentations have been made at ORSA/TIMS meetings.

In our experience, the most effective dissemination device is the case study approach, involving local, well-trained staff. In particular, we consider as successful a formula where the case study involves a graduate student in engineering or economics, from the country under study, who is fully involved in all stages of the study.

In addition, an approach currently under consideration is the organization of an EDI course, inclusive of a demonstration case study.

Resources

The research program has always enjoyed sufficient financial support from the Bank's Research Committee, and a total of around $425,000 was invested in the research project in this manner. Moreover, as the operational usefulness of the methodology became clearer, substantial funding was attracted from other sources, primarily to finance case-studies. For example, case-studies of the Egyptian, Indian and ASEAN fertilizer sectors were financed by the Industrial Projects Department, East Asia Projects, and South Asia Projects, and involve a total of about $75,000. The study of the Andean Common Market had a budget of $90,000, jointly shared by the Bank's Industrial Projects Department, Inter-American Development Bank, and Andean Pact. The Turkish Industrial Development Bank, under whose auspices the chemical sector study in

Turkey is being carried out, envisions a budget of around $1 million, which it proposes to finance from its own sources. The Korean Government has been advised to approach UNDP for the finance it intends to carry out with our help. Finally, the studies of the forest industries sector in various regions in the world, carried out by FAO, are entirely financed from UNDP funds, at a total cost of more than $1 million; most of this is for data collection.

In contrast, the internal staffing situation of the project has almost always been close to a critical minimum. Initially, all participants in the project were consultants, as mentioned before. As the research reached a more operational stage, the use of outside consultants was gradually decreased and more internal staff was associated with the project. However, at no time have more than three professional man-years per annum been devoted to the research.

At the present time, the situation has become critical. Not more than about three man-months of professional time is available per year to carry out the dissemination effort, and resources available for further model development are minimal; in fact the only relevant research carried out in this context is that focused on technology choice in mechanical engineering. The researchers have already reached the stage where they have to turn down requests for assistance, or restrict themselves to sometimes irresponsibly limited levels of advice. To the extent possible, former collaborators on the project are being used as consultants. However, it is quite likely that with the publication of the manuals, the number of requests for assistance will reach a level where the Bank will find itself in the embarrassing

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with the publication of the manuals, the number of requests for assistance
will reach a level where the Bank will find itself in the embarrassing
position of having successfully disseminated a planning methodology, while
not being in a position to assist in the subsequent assimilation effort in
member countries.

Issues for the Future

The main issue facing the Bank at this time is whether and how to
disseminate this methodology further, both with regard to its own project
work and that carried out in its member countries. It seems clear that the
project has achieved its original objectives, in the sense that a method has
been developed and tested that provides an operationally meaningful approach
to project identification and subsector planning. In terms of written output,
the project has probably gone as far as one can go, given the current state
of model development. The main questions relate to the intended audience,
and the conditions that need to be met for effective dissemination and assimilation.

Within the Bank, it would appear that the little attention paid to
systematic sector planning, particularly in the industrial sector, precludes
widespread use of the method: the currently practiced project-by-project
approach is likely to prevail for some time. In any case, given present
staff constraints in the industrial field, it is unlikely that an expanded
work program on industrial subsector planning can be accommodated.

Outside the Bank, the situation varies from place to place. If our
case-study experience is any guide, it is clear, that within the context of a
relatively long-term and joint effort, the essentials of the approach can be
transferred to someone with some background in mathematical economics. In

other cases, substantial technical assistance from the Bank is needed. How should the Bank respond to such requests in the future? Where should finance come from? Currently, various ad hoc solutions have been found or suggested, combining funds from the Research Committee, the Regional Offices, UNDP, other international organizations such as IDB, and the relevant counterpart organization. However, invariably, the financing arrangement is messy and time-consuming.

The scope for further research in this area is wide. An earlier attempt to incorporate uncertainty into the planning model failed. Nevertheless, this aspect of the planning problem is sufficiently real to warrant a further research effort. Moreover, although vastly improved, solution methods for this class of model remain inefficient; should further work be contemplated? Finally, research experience is restricted to a few industrial subsectors, and the question may legitimately be raised whether it would not be desirable to construct formalized approaches for other subsectors as well. While discussing this issue, it should be borne in mind that research on the non-process industries is progressing under a different RPO.

It would appear that the establishment of a special unit within the Bank, specifically in charge of further work in this area, would be justified. Such a unit, with a minimum of 3 to 4 professional staff members and a similar number of research assistants/programmers, could have the following tasks: (1) further application of the method for the industrial sub-sectors where the research phase is concluded; (2) further research on directly related byt as yet unresolved issues; and (3) expansion of industry coverage, including analysis of important natural resources and derivates on a world-

wide basis. The alternative to this organizational step is, for all practical purposes, the discontinuation of Bank involvement in this area once the manual series described above is completed. In that event, it may be hoped, international consulting-engineering firms (some of whom have already expressed an interest) will capitalize upon this Bank effort.

Bank Research on Incentives and Domestic Resource Costs;
Economic Integration in Developing Countries;
and Export Promotion and Market Access

Bela Balassa

I.   Incentives and Domestic Resource Costs

Past and Ongoing Research

Bank research on incentives began with the "The Structure of
Protection in Developing Countries" research project in 1967. The research
project, the findings of which were published in book form in 1971,
provided an evaluation of the system of protection applied in developing
countries. This was done by estimating effective rates of protection for
Brazil, Chile, Mexico, Malaysia, and Pakistan, and analysing the economic
cost of protection in these countries. Estimates were also reported for a
developed country, Norway.

For greater comparability, subsequent work concentrated on semi-
industrial countries. Furthermore, the scope of the investigation was extended
to cover -- in addition to protective measures -- credit and tax incentives, and to
estimate effective rates of subsidy that incorporate all these incentive
measures. This was done in the "Development Strategies in Semi-Industrial
Countries" research project (RPO 670-01) that also analyzed relative
incentives provided to exports and to import substitution in countries following
different development strategies, including Argentina, Colombia, Israel,
Korea, Singapore, and Taiwan. The findings of the research project were
incorporated in a volume that is under consideration by the Bank's Publication
Committee.

In the framework of the "Industrial Policies and Economic Integration in Western Africa" research project (RPO 671-87), indicators of incentives as well as of domestic resource costs have been estimated for Ghana, Ivory Coast, Mali, and Senegal, so as to compare the incentives received by particular economic activities and their social profitability. In regard to agriculture, estimates have been made for various commodities produced in several regions and by the use of alternative techniques. Within the manufacturing sector, indicators of incentives and resource costs have been estimated on a firm-by-firm basis while earlier studies relied on input-output tables.

Draft versions of the individual studies are available and have been communicated to the individual governments. A summary paper "Comparative Advantage and Economic Integration in Western Africa" has also been prepared, examining the implications of the results for the extra-area and the intra-area trade of the West African countries.

Applications

An early summary of the findings of "The Structure of Protection in Developing Countries," with emphasis on the policy implications of the results, was circulated in the Bank as EC-175, "Industrial Protection in Developing Countries" in 1970. The discussion of the findings contributed to the increased emphasis given in country economic reports and policy analyses to the cost of protection in countries oriented towards import substitution and to the need for outward orientation. It also led to several in-house estimates of effective protection, including Nicaragua and Iran.

The circulation of working papers derived from the "Development Strategies in Semi-Industrial Countries" research project (in particular, "Reforming the System of Incentives in Developing Countries" and "Export Incentives and Export Performance in Developing Countries") and seminars based thereon have also contributed to an increased outward orientation of Bank work. Furthermore, the study on Argentina appears to have influenced the policy adopted in the mid-seventies and it has led to a new application of the methodology commissioned by the Argentine government. With the prominent positions assumed by their authors (Research Director of the Bank of Israel; Vice-President of the Korean Development Institute; Economic Adviser to the Prime Minister of Singapore; and Minister without Portfolio and Deputy Governor of the Bank of China, respectively), the studies on Israel, Korea, Singapore, and Taiwan, too, have affected economic policy-making in the countries concerned. Finally, advisory reports prepared for the governments of several developing countries and published in a volume under the title "Policy Reform in Developing Countries" have influenced the policies adopted by some of the countries concerned.

The Senegal study of the Western Africa research project has led to the preparation of a tariff and tax reform, to which the author of the study has made a substantial contribution. The reform of the incentive system was also in preparation in the Ivory Coast but it has aborted as a result of political changes. Finally, the recommendations made in the Mali study have led to an investment project financed by the Bank.

The methodology of the Western Africa research project has been applied in the Bank to agriculture as well as to industry. The Agricultural Projects Department sponsored a comparative investigation of

agricultural pricing, "Price Intervention in Agriculture" (RPO 671-39),
which has entailed estimating indicators of incentives and domestic resource
costs. The methodology has also been utilized in industrial sector studies
of Cameroon and Nigeria, the former in the framework of an industrial
mission and the latter in the form of a special mission financed by the
Nigerian government. Finally, a study of domestic resource costs in agri-
cultural and industrial activities in Bangladesh, "International Trade Policy
for the Development of Bangladesh" (RPO 671-75) is under way.

Future Work

There are requests for the application of the effective protection/
subsidy-domestic resource cost methodology on the part of several Regional
Offices. DPS resources available for country applications of the method-
ology are severely limited, however, and the situation is similar
in the Regional Offices. Resources to carry out such studies may be made
available by increasing staff in the DPS, CPS, or the Regional Offices;
alternatively, funds for hiring consultants may be provided in the research
budget and/or in the budgets of the Regional Offices.

Particular interest attaches to applying the effective protection/
subsidy-domestic resource cost methodology in non-industrial countries, and
resource-rich countries, where little research has been done so far. Such studies
may be part of an investigation of alternative stategies for industrialization in
these countries. A study of Tanzania, for example, would permit examining the
implications of a basic needs-oriented approach to international trade.

Country applications of the effective protection/subsidy-domestic
resource cost methodology may be made in semi-industrial and industrializing coun-
tries as the need arises. The Bank should also monitor the trade policies followed

by these countries and offer policy advice. However, further research on countries that have established an industrial base would bring diminishing returns. Possible exceptions are research on recent policy changes and on an efficient import substitution-export promotion sequence.

A paper is planned on policy reactions to external shocks, such as the oil crisis, the 1973-74 recession, food shortages, world inflation, and the "new protectionism" in selected developing countries. In turn, research on the import substitution-export promotion sequence would require the development of an appropriate methodology.

II. Economic Integration in Developing Countries

Past and Ongoing Research

Reference has been made above to the paper "Comparative Advantage and Economic Integration in Western Africa" that summarized the preliminary findings of the research project on Western Africa (RPO 671-35). The paper has also dealt with the obstacles to economic integration in the region and made recommendations for alleviating these obstacles. An earlier paper "Types of Economic Integration" compared integration efforts in developing countries with those in developed and in socialist countries. In turn, "Economic Integration among Developing Countries" examined past experience with integration via trade liberalization and the so-called project approach, with recommendations made for the future. An analysis of the costs and benefits of the project approach is provided in the Fertilia Study on East Africa, carried out in the framework of the "Programming in the Manufacturing Sector" (RPO 670-24) research project. Finally, a report on the past experience and future prospects of regional integration in the Caribbean under the title "Commonwealth Caribbean: The Integration Experience."

Applications

The Bank has not played an important role in promoting regional integration in developing countries. It has financed, however, several regional infrastructure projects as well as an industrial project, the CIMAO plant in Togo that will sell cement in the Ghana and the Ivory Coast as well. Also, a study was prepared on regional specialization in fertilizer for ASEAN and assistance was provided on a similar study, the Andean Common Market.

Furthermore, apart from the report on economic integration in the Caribbean referred to earlier, an industrial sector report examined economic integration in Central America. Finally, two advisory reports "Tariffs and Trade Policy in the Andean Common Market" and "Guidelines for the Common External Tariff of the Andean Common Market" were prepared with the purpose of aiding the establishment of the common external tariff in the Andean Common Market.

Future Work

Economic integration among developing countries presents important policy issues for the Bank. Topics of interest include experience with past integration schemes, in particular as far as agreements on industrial specialization are concerned; future possibilities for regional integration by the use of tariff preferences and through industrial specialization agreements; and the benefits and costs of inter-regional trade among developing countries in the framework of preferential trade agreements for collective self-reliance.

Among these topics, a paper is under preparation on intra-industry specialization in developing countries. It is also planned to examine how

specialization agreements can be oriented towards ensuring international competitiveness. It would further be desirable to undertake work on the experience of complementarity agreements in LAFTA and of specialization agreements in the Andean Common Market.

III.   Export Promotion and Market Access

Past and Ongoing Research

Issues related to exports arise on the supply side as well as on the demand side. On the side of supply, incentives and institutional factors will affect exports. In the framework of RPO 671-10, "Promotion of Non-traditional Exports" the experience of a number of countries with export promotion was analyzed. Work on Argentina, Brazil, Colombia, and Mexico was carried out under the auspices of ECLA while papers on India, Israel, Korea, and Yugoslavia were prepared by Bank staff-members and consultants. The paper on India also draws on work done in RPO 670-21 "Export Promotion and Preferences: India."

The research project on "Export Incentives in Developing Countries" (RPO 671-35) utilizes the effective protection/subsidy-domestic resource cost methodology to analyze the incentives granted to, and the social profitability of, exports on the firm level in Greece, Korea, Pakistan; work on Brazil has not started yet. Apart from incentives, the research project considers the institutional aspects of export promotion, including marketing.

RPO 671-56, "Marketing Manufactured Exports" concentrates on the role of marketing in the development of textile exports from Colombia. In turn, the "Key Institutions and Expansion of Manufactured Exports" research project (RPO 671-68) examines the role of marketing effects of national firms, trading companies, foreign buyers, and multinational corporations in regard to

manufactured exports from developing countries, and considers the institutional implications of promoting these exports.

As regards factors affecting demand for the manufactured exports of the developing countries, RPO 670-20 "Industrialization and Trade Policies for the 1970s" focused on adjustment policies in the developed nations. For several years, this project was not followed up by further research. It has since been concluded, however, that the Bank has a role to play in this area, in part to help Bank operations in manufacturing and in part to provide assistance in policy advisory work.

The emergence of new protectionism in developed countries was discussed in "World Trade and the International Economy: Trends, Prospects, and Policies." Also, a paper is being prepared on the employment effects of trade in manufactured goods between developed and developing countries, with separate consideration given to different skill levels.

A systematic analysis of market penetration by developing country exports, the factors determining protectionist actions in the developed countries, and the experience of selected industries where protectionist measures have been taken is carried out in a series of research projects utilizing a common methodology. They include RPO 671-67, "Effects of Increased Import of Manufactured Goods from Developing Countries" in the United States, the manufacturing export part of RPO 671-66 on Western Europe, and RPO 671-82, covering Australia, Canada, and Japan.

Applications

Increased demand for policy-related work in the trade area has emerged in recent years, reflecting interest among policy makers in both the developed and developing countries, and an increasing role of the Bank in policy analysis. Several papers on trade trends and issues, drawing to a considerable extent on research done in the area, were prepared as background for World Development Report 1978, and additional papers on these issues are being prepared as background for next year's report.

Work on trade in electronics and electrical machinery, textiles and clothing, and non-electrical machinery carried out by the Development Economics Department represents a mixture of original research and applications. This work has been well received but its continuation and extension into other industries such as footwear is threatened by staff limitations, caused partly by expanded demand for policy work.

Future Work

Bank work on policy issues is likely to lead to demand for further research in this area. This demand is in part met by monitoring protectionist actions taken by developed countries. Further interest attaches to evaluating the impact of newly imposed protectionist measures in developed countries on the export industries of the developing countries. Finally, the studies of institutional and marketing aspects of export promotion, which now focus mainly on consumer goods sold in developed country markets, may be extended to capital goods industries.

The continuation of work on trade in electronics and electrical machinery, textiles and clothing, and non-electrical machinery is of consider-

able importance to developing countries, and may be followed by studies on auch product groups as footwear and transport equipment. Given the rapidly increasing share of these commodities in the exports of developing countries, this work should be put on a regular basis by providing the necessary staff resources.

Among intermediate products, steel, fertilizer, and petrochemicals offer possibilities for exportation and for import substitution in the developing countries and are subject to Bank lending. In the case of steel and fertilizer, work presently carried out in different departments would need to be coordinated. Given its importance for developing countries, it would further be desirable to undertake work on petrochemicals on a continuous basis, involving projections of supply, demand, as well as prices. More generally, further extension of commodity work to processed primary products would be desirable.

Moreover, it would be desirable to provide for the updating of information collected in the research projects on market penetration once they will have been completed. The updating of information on marketing channels would also be useful, possibly in the framework of the industry studies referred to above.

Bank Research on Industrial Technology[1]

The nature of industrial technology has been of central concern
to Bank research in several areas:

- sub-sector investment analysis, with particular reference to
  the process industries (e.g., fertilizer);

- industrial organization, with emphasis on the role of small and
  medium enterprises;

- industrial capacity utilization; and,

- capital-labor substitution, with greatest attention to the
  non-process industries, specifically mechanical engineering.

Research in the first two areas is discussed in separate notes, and will
here be mentioned only in passing. In turn, research on technological
change is anticipated in the future, so that priorities in this area
are also discussed below, in the concluding section.

Capacity Utilization

Contrary to what might be expected given relative capital and
labor scarcities, rates of industrial capacity utilization appear typically
to be lower in developing countries than in the industrially advanced
countries. This observation has led to the suggestion that it might be
possible to secure increased output and employment in many developing
countries without additional investment, simply by increasing capacity
utilization. The reasons for low utilization and means to increase it have
been explored in two Bank projects -- "Utilization of Industrial Capacity

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1/ Draft for the Industry and Trade Research Steering Group.

in Five Latin American Countries" (RPO 670-25) and "Industrial Capacity Utilization" (RPO 670-95).

The quality of readily available data on industrial capacity utilization in most developing countries is quite poor. An important contribution of these projects has been to develop quite simple yet meaningful indicators of capacity utilization, and very carefully to estimate rates of utilization for a number of countries, making possible cross-country comparative analysis. Thse data indicate that utilization rates in the countries surveyed are indeed quite low, that they differ among countries and industries, and that at least a part of the variation across industries can be explained on the basis of technological characteristics.

As to the reasons for low utilization, the research indicates that a variety of policies across a number of fields (e.g., licensing of various forms, restrictive labor legislation) have played an important role in some countries. However, at least some of the research casts considerable doubt on the expectation that greatly increased capacity utilization could be achieved through changes in these policies alone. Here a variety of micro-economic cum institutional constraints are cited, including factors such as the shortage of skilled labor, inadequate provision of transportation and other social infrastructure for workers not on the first shift, individual preferences regarding work scheduling, and the understandable reluctance of small scale entrepreneurs to delegate operational management of their firms.

As regards their operational relevance, these projects were intended to have a general impact, to increase awareness of issues concerning capacity utilization, to provide empirical estimates as well as illustrative case studies of explanatory factors, and to reach policy conclusions at the specific country level as well as more generally. The potential impact has yet to be realized, and awaits the preparation of an integrated survey to distill the principal results of the various pieces of research conducted under these projects. Without such a survey, operational economists lack convenient access to empirically documented approaches to policy-focused analysis of industrial capacity utilization.[1]

Mechanical Engineering

Bank research centered on mechanical engineering began with the project "Programming in the Manufacturing Sector" (RPO 670-24). The aim of this project was to test means of incorporating interdependence among industrial activities into formal project identification and selection methods. For completeness of coverage, case studies were carried out for both a process and a non-process industry; these were respectively fertilizer and mechanical engineering.

The single most important difference between the process and non-process industries is found in the nature of the processing facilities used in production. Corresponding to the prevalence of multi-purpose processing facilities in the former but not in the latter industries, economies of specialization -- as distinct from economies of scale using unchanged

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[1] A synthesizing monograph is forthcoming from the "Industrial Capacity Utilization" project, but it will remain to reconcile the results of this project with those of its companion.

production methods -- play an important role only in the non-process industries.[1] Economies of specialization, in turn, lead to importtant interdependencies among the choices of processing facilities across a potentially vast number of products.

This form of interdependence makes the choice of production technology to produce any individual product dependent not only upon the volume of demand for the specific product but also upon the volumes of demand for a large number of related products which may share processing facilities with the product in question. However, given the volumes of demand, appropriate degrees of specialization across processing facilities can -- to a first approximation -- be determined on the basis of engineering judgment. Initial research into investment analysis for mechanical engineering activities under the "Programming..." project exploited this fact. With respect to each of a set of interdependent products, and given forecasted demand levels for the final products within the set, an analytical model was designed that focuses on the decision whether to produce locally or to purchase from external sources. The model is not explicitly concerned with determining appropriate degrees of specialization; this determination takes place through the estimation of the model's parameters by engineers.

In short, the model is intended to provide an initial comparative advantage ranking of possible import substituting production activities prior to the detailed design of specific products. Engineers and industry specialists familiar with the model's experimental application to Korea appear to find that it provides useful quantitative information that facilities the

1/ In the process industries, processing facilities are typically single-purpose and product specific, usually at the plant level. In contrast, where single-purpose processing facilities are found in the non-process industries, it is generally at the machine or shop level. Multi-purpose processing facilities in the mechanical engineering sector range from individual machines such as drill presses through integrated facilities such as foundries.

incorporation of two types of interdependence into project identification work. The first results from the use of common components and sub-assemblies; the second from the sharing of multi-purpose processing facilities. Both underlying phenomena are extremely important, for they determine the extent to which economies of scale may be exploited through increasing the utilization of indivisible processing facilities.

Capital-Labor Substitution in Mechanical Engineering

The desire explicitly to incorporate economies of specialization into investment analysis for a non-process industry was one of the factors that prompted the project "The Scope for Capital-Labor Substitution in the Mechanical Engineering Industry" (RPO 670-23). However, the primary concern was to estimate the degree of capital-labor substitution feasible in typical mechanical engineering activities, to permit careful forecasting of the response of employment to possible changes in the economic environment, for example, changes in relative factor prices. In this respect, the project represented a case study aimed at the growing concern with means to enhance employment generation.[1] Additional justification was found in the importance of the mechanical engineering industry to industrial development, particularly as a "carrier" of technological change.

This research has involved translating engineering data regarding individual tasks into a format that permits economic analysis of choice of technology. It has led to the conclusion that the scope for capital-labor substitution is quite wide at low levels of output, but that it narrows markedly at higher volumes of production owing to eocnomies of specialization which strongly

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[1] Bank research on employment generation through industrial development and on the scope for capital-labor subscitution in industry began with the project "Employment and Capital-Labor Substitution" (RPO 670-54). This exploratory project solicited a number of individual studies by eminent consultants, but for a variety of reasons it did not lead anywhere. It is thus not further discussed in this note.

favor capital intensive techniques. Moreover, the results underscore the critical importance of efficiently organizing production among processing facilities so as to achieve the proper balance between capacity sharing in multi-purpose facilities and specialized production using single-purpose facilities.

The research carried out under this project suggests a methodology whereby economies of specialization may be incorporated into investment analysis, but it remains to articulate the details of the approach. Its promise appears greatest where the number of possible investments is limited and substantial gains can be achieved by exploiting possibilities for sharing expensive and specialized processing facilities among different activities involving disparate end products. In such cases, the methodology would greatly facilitate identification of the most advantageous possibilities for sharing expensive equipment; identification would be at a level of analysis meaningful to project design engineers.

Through the IFC, staff working on this research became familiar with the effort by Mexico's Nacional Financiera to promote the production of plant equipment. The project identification task confronting Nacional Financiera happens exactly to fit the circumstances under which the methodology's promise appears greatest, so that a proposal simultaneously to articulate and apply the approach was made. A final decision has yet to be made, but it appears that lack of financing will lead to rejection of this proposal. However, the proposal's chances of acceptance would obviously have been greater were the methodology already fully articulated.

Appropriate Industrial Technology

The project "Scope for Capital-Labor Substitution..." also investigated differences between indigenously produced and imported machinery as seen from the perspective of using industries in a developing country. While falling within the genre of "choice of technology" case studies, this part of the project had the explicit purpose to investigate why existing machinery producers in developing countries have been unable to capture a larger share of the market for many types of

machinery. The resulting case study was thus directly addressed to under-
standing the behavior of producers in choosing among technologies, as opposed
simply to analyzing the implications of the physical embodiment of technologies
in processing facilities.

The focus was on the choice of textile weaving equipment in Korea,
where the "curiosity" to be explained was the choice by many textile producers of
imported looms costing two-to-three times as much as the locally produced equipment.
Broadly speaking, the explanation could be found in one or several of four reasons:
different varieties of cloth require different types of looms; Korean looms embody
a generally inefficient technology; government policies (e.g., that result in higher
interest rates to finance the purchase of indigenous looms) discriminate against the
use of indigenous looms; and, Korean textile producers do not choose among
technologies to maximize profits. The research found that the labor intensive
technology embodied in locally produced looms was generally more appropriate on
economic grounds than the capital intensive technologies embodied in the more
highly automated, imported looms.[1/] The explanation for the choice of imported
looms was typically found in government incentives that favored their selection.

The case study just discussed complements a large number of similar
studies undertaken outside the Bank over the past several years. To bring the
conclusions of the entire body of recent "choice of technology" research into the
Bank's thinking, a survey was commissioned under the "Appropriate Industrial
Technology" (RPO 671-51) project. The objective of this survey is, in the first
instance, to attempt a rough impressionistic estimate of the macro-economic con-
sequences of choosing inappropriate versus appropriate technologies, in order to

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[1/] A similar research project in the IFC, investigating choices made by some of
its client firms, also concludes that there is wide scope for capital-labor
substitution in textiles production.

establish the relative importance of technological choice as a determinant of industrial development performance with respect to employment generation.

The survey demonstrates that choice among technologies is possible in many industrial activities without sacrificing efficiency, and moreover that alternative choices can have a pronounced impact on the employment (and output) generated by a given volume of investment. Different profit rates are also associated with alternative choices of technology, with more labor intensive technologies yielding higher profits at lower wages. But, choice of technology is obviously not the only determinant of profit rates; the efficiency with which a particular technology is utilized is of equal importance. The question that arises in this connection is whether entrepreneurs find it as profitable to search for more appropriate technologies as to achieve greater efficiency with a technology that may not be profit maximizing at full efficiency. This is not a moot issue, as costs are entailed to search for alternative technologies, just as effort must be expended to improve efficiency.

The second objective of the survey is thus to consider possible means of facilitating entrepreneurial selection of economically appropriate technologies. The means selected for rather intensive review is the promotion of capital goods production by the developing countries, which appears to offer several advantages. First, several case studies reported in the literature find that locally produced equipment embodies a more appropriate technology than does imported equipment -- the case of Korean looms is not unique in this respect. Second, developing countries can produce some types of equipment more cheaply than can developed countries, particularly the types of equipment likely to be used by small and medium scale enterprises. Third, marketing of such equipment, both domestically and through export, lowers the cost of access to alternative technologies. In turn, promotion of capital goods production in developing countries is an activity in which the Bank could become directly involved through its lending.

A separate, second phase of the "Appropriate Industrial Technology" project (given a separate RPO number, 671-77) has resulted from involvement of the researchers in reviewing the choice of technology for a Bank-financed textile project. At issue was the adequacy of the assessment that led to the selection of a more highly automated technology than had been found eocnomically appropriate for similar production in Korea, but in this case for a project to be located in a country far less industrially developed than Korea. This phase of the research has as its objectives, first, to amass the body of data needed to assess technological choices within textiles production, and second, to undertake an assessment for a hypothetical project similar in nature to that reviewed initially. Particularly important is that this phase, unlike the first (and equally, unlike most previous "choice of technology" case studies), is to be carried out jointly by operationally oriented engineers and research minded economists. Previous studies by the latter have typically not proved convincing to the former; it is hoped that a joint effort may resolve some of the issues that remain outstanding.

Relevance of Past and On-going Research

It is evident that the research on industrial technology surveyed above is micro economic and empirical. This orientation is also found in the other research not surveyed here, and equally in the more recent work on trade and industrial strategy. There is no substitute for micro empirical research to achieve soundly based policy prescriptions if an appreciation of technological factors, particularly as they interact with institutional elements, is required. A case in point is the research on industrial capacity utilization: a clear understanding of the significant constraints to achieving much higher utilization came only as a result of such research. The design of practically oriented methods of investment analysis also requires firm grounding in micro empirical research.

Micro empirical research focused on policy assessment and advising at the country level has obvious relevance, but needs to be disseminated effectively. In turn, as in the case of work under the "Appropriate Industrial Technology" project, micro empirical research may also be oriented toward the Bank's own policies and procedures. This work, like that on investment analysis in mechanical engineering, is in its infancy as regards its dissemination to and assimilation by decision-makers and operational staff. To the degree that such work is focused on project identification and design, it should eventually affect decision making at the project level. But first it will be necessary to gain multi-disciplinary acceptance, which will doubtless require that the researchers become more actively involved in operational project focused work.

It is also evident that much of the research has involved the case study approach, where generalizability is a serious issue. However, there is often no viable alternative. A case in point is the research on economies of specialization in mechanical engineering: economies of specialization can be understood only with respect to specific cases. Lags in dissemination have unfortunately retarded the vetting process that is required to probe the generalizability of case study research regarding mechanical engineering.

The case studies undertaken to date have not been isolated pieces of research. Firstly, they have been designed to be responsive to important issues in the Bank's industrial lending. There is nonetheless much work yet to be done to demonstrate their relevance to operational staff. Secondly, subsequent case studies have built on the foundations laid by their predecessors. In this respect the research staff have achieved a distinct comparative advantage in certain areas, for example, choice of technology and mechanical engineering.

Future Research

No further research is planned on industrial capacity utilization, through further effort with regard to dissemination is needed. In turn, a great deal more further work is required to capitalize on research involving mechanical engineering. Apart from making the results of this research accessible, two tasks are deserving of priority. First is the detailed articulation of the methodology for incorporating economies of specialization -- equivalently, capital-labor substitution -- into investment analysis and testing cum demonstration of the methodology. Second is the use of what has been learned about the organization of production to address issues regarding the role of small and medium scale versus large scale enterprises.[1]

The identification of priorities for further research in the general area of choice of technology awaits more complete discussion of the results from the first phase of the "Appropriate Industrial Technology" project. These results suggest that further work may be warranted to investigate:

- the influence on technology selection and project design of consulting engineers having different backgrounds;

- the prospects for increasing the production of capital goods in developing countries, with special attention to trade in machinery among developing countries;

- the diffusion of industrial knowledge, with empahsis on institution building possibilities; and,

- the use of used equipment, and possibilities for increasing trade in used equipment.

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[1] The research suggests that a high degree of specialization is required to achieve efficiency at small scale. But, factors not involving production technology -- such as costs of distribution and forces leading to product differentiation -- weaken this argument and need equally to be taken into account.

Complementary work is already underway with respect to the last two of these areas under the aegis of research on small and medium sclae enterprises. Surveys undertaken for this research examine the sources of technological information as well as the use of used equipment among firms in several countries.

Finally, in part as a result of the recent emergence of new style projects aimed to build up the capacity for indigenous technological change, operational staff have recently argued that priority should be given to research centered on technological change. Research staff have also been drawn to this conclusion, as a result of finding that there is no sharp line dividing technological change from other processes that improve industrial performance.

Among the possible foci for research in this area, two are under active discussion. The first would seek to complement research sponsored under IDB/ECLA auspices that has documented the purvasiveness of technological change in several Latin American countreis. This research needs to be supplemented with similar investigations of technological change in countries following more outward-looking industrialization strategies, to determine the influence of industrialization strategy on the extent, pace, and direction of technological change. In this connection, exports of technology by the semi-industrial countries may be particularly deserving of attention, for it would equally cast light on an important means of technology transfer among developing countries. In turn, further work on the mechanical engineering industry, specifically to assess its role in the process of technological change as the supplier of capital goods, also appears warranted, and would profit from the Bank's previous research on mechanical engineering.

Finally discussion of priorities for future research must also consider staffing constraints. Present staff resources are stretched thinly across perhaps too many areas, with evident implications for dissemination as well as for starting

work in new areas. Without additional resources, shifts in the direction of research will either be slow in coming or take place at the expense of realizing the full relevance of past research.

Bank Research on Comparative Advantage,

Trade Patterns and Economic Growth

I. Past and Ongoing Research

This paper describes Bank research under the general heading of
"comparative advantage, trade patterns, and economic growth." While there have
been a number of research projects in this general area, this paper will concen-
trate on three ongoing projects: (1) RPO 671-05, Patterns of Industrial
Development ("Patterns"); (2) RPO 671-32, A Comparative Study of the Sources
of Industrial Growth and Structural Change ("Sources I"); and (3) RPO 671-79,
The Sources of Growth and Productivity Change: A Comparative Analysis
("Sources II"). Other projects will be referenced where appropriate. There
is considerable overlap in this general area with the research described by
Professor Balassa on trade incentives, economic integration and export promotion
and the reader should also consult his paper.[1]

The discussion below will emphasize the importance of the research
projects for country economic work. A different strand of research at the Bank
deals with models of trade encompassing the entire world. The relevant research
projects are: (1) a completed project done by Waelbroeck and Ginsburgh to build
a relatively small general equilibrium model of world trade (RPO 670-07), and
(2) a new project by Waelbroeck to build a larger world trade model for the
World Development Report. The country modelling work to be done for the
Sources II project described below is complementary to Waelbroeck's work.

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[1] Two completed research projects (RPO 670-19 and RPO 670-79) which focussed
on the role of trade in particular regions (and which were based in the
regional divisions) are also not discussed here. RPO 671-66 on LDC trade
with Western Europe is covered by Balassa's paper.

The Patterns and Sources projects have two basic aims. The first is methodological: to test the application of existing and new analytic methods for industrial analysis within the Bank. The second is to develop a body of comparative data that can be used both to uncover commonalities in the process of industrialization and to provide a basis for analyzing the experience of individual countries. The comparative nature of the projects also provides a useful framework for what might be called "analysis by exception." Exploring why countries or sectors deviate from the norm is often a good way to test hypotheses about the nature of the normal patterns.

For Example, Korea and Taiwan have often been held up as exemplary cases of export-led growth. However, even casual comparison, let alone the more detailed analysis of the Patterns and Sources I projects, indicates that they are exceptional cases, quite different from the norm. One cannot expect that other countries can or will follow their example as part of some natural economic process. Instead, they have been much studied precisely because they are exceptional in the hope that lessons can be learned for other more typical countries.

The Patterns project seeks to provide statistically estimated structural norms at both the macroeconomic (agriculture, industry, services) and multi-sector (two-digit manufacturing) levels. The methodology follows closely that of Chenery and Syrquin in viewing a country's industrial structure as a function of its size, level of per capita income, and trade orientation. The project starts from a data base covering a large number of countries (about a hundred) over a roughly twenty-year period, and uses regression analysis to estimate common patterns.

In the Sources I project, a multi-sector input-output model is used to determine the relative contributions of domestic demand growth, export expansion, import substitution and technological change to industrial growth

and structural change. The analysis is based on detailed input-output data (20-30 sectors) for a sample of eight countries (Japan, Korea, Taiwan, Turkey, Israel, Norway, Mexico, Colombia) for a few benchmark years over roughly a twenty-year period. This sort of data is much more difficult and expensive to assemble, hence it is necessary to restrict the analysis to a smaller group of countries than in the case of the Patterns project.

In the Sources II project, the methodology of the Sources I project is being extended to explore the impact on growth and structural change at the multi-sector level of a variety of policies and factors, including growth in the supply and quality of factors of production. The project initially involves two countries (Korea and Turkey) and will also involve developing more detailed comparative data for one or two sub-sectors. A third country will be added later.

The choice of level of aggregation at which to carry out a study is critically affected by the nature of the questions being explored. Issues concerning industrial structure, such as examining the impact of trade and incentive policies, are best approached with multi-sector models. Sub-sector or project analysis is required where detailed questions of technology and institutional organization are concerned. However, it is very useful to explore similar issues at more than one level of aggregation.

For example, an integral part of the design of the Sources II project is a comparison across countries of one or two sub-sectors. The intent is to test at the sub-sector level hypotheses and assumptions that are part of the multi-sector analysis. Does the use of production functions and assumptions of profit maximization in a multi-sector model lead to results that are incompatible with an analysis of behavior at the sub-sector level? Can a careful analysis of behavior at the sub-sector level be used to improve the specifi-

cation of behavior in a multi-sector model? Is the assumed responsiveness to policy variations at the multi-sector level compatible with observed behavior at the sub-sector level?

One of the issues to be explored in the Sources II project is the role of changes in factor productivity in growth. The analysis will proceed at both the multi-sector and sub-sector levels. At the multi-sector level, it is feasible to attempt to measure increases in total factor productivity within the framework of sectoral production functions. However, the specification of production technology at the sectoral level is so aggregate that it is difficult to analyze how and why technological change takes place. For example, variations across countries or over time in measured factor productivity at the sectoral level may well be due to variations in the composition of output within the sectors. An examination both of the sub-sector composition of given sectors and of variations in factor productivity growth among sub-sectors is necessary for even an adequate description, let alone explanation, of productivity growth at the sectoral level.

While varying in focus, level of aggregation and degree of country detail, the three projects are quite complementary, both among themselves and with other research work in the Bank. They share with much of Professor Balassa's work a concern with the impact of trade policies. For example, Balassa has written on "A Stages Approach to Comparative Advantage" in which he argues that countries follow a sequence of import-substitution and export-expansion phases, with concomitant changes in their industrial structures. In the Sources I project, the issue of the existence of temporal sequences of changes in the structure of demand and production is one of the major themes of the comparative analysis. An examination of the changing role of domestic demand, export expansion, import substitution and technological change over time within given

countries reveals clear sequences of changes in the "engines of growth" both among sectors and among categories of demand. Regression analysis with the cross-country data from the Patterns project and a cross-country simulation model developed by Chenery and Syrquin as part of the Sources I project have been used to explore the emergence of "early", "middle", and "late" sectors as countries grow over time. The question of the nature and causes of such sequences will also be one of the themes to be explored in the Sources II project.

Any industrial analysis must take into account the linkages among industrial sectors. Input-output analysis provides perhaps the simplest model of how different sectors are linked through the fact that they require one another's outputs as inputs. The need to take such linkages into account, and the power of input-output analysis in doing so, has been amply demonstrated. There are, however, links other than the requirement for intermediate inputs through which indirect effects are manifested. Indeed, in market economies, the price system which equilibrates supply and demand balances across all the interrelated markets in an economy represents the most powerful mechanism by which changes are transmitted throughout the economy.

For example, effective rates of protection (ERP's) are used to measure the extent to which domestic markets are distorted by tariffs and subsidies and also to measure the sectoral resource-pull effects of such protection. Input-output coefficients are used to measure the indirect linkages among sectors. The analysis requires a number of rather strong assumptions in order to provide theoretically appropriate indicators of the effects of protection. In addition to assumptions about production technology, one must assume that the country faces fixed world prices for both its exports and imports -- that it is a "small" country -- and that for efficiency domestic prices must lie between the export and import prices. In essence,

domestically produced and imported goods must be assumed to be perfect
substitutes in use. None of these assumptions is really tenable in a variety
of sectors and countries. When they are not satisfied, then the determination
of comparative advantage depends on the interaction of supply and demand
effects across all interrelated markets, with domestic prices no longer
being rigidly linked to trade.

The standard input-output model that underlies the Sources I project
cannot be used to analyze the role of price variables, including the exchange
rate, on the allocation of resources and on the structure of industry and
trade. The Sources II project will rely on a general equilibrium model that
explicitly incorporates prices (and price-responsive supply and demand functions
at the sectoral level) endogenously into the model. Thus the Sources II project
can explore, within its model framework, the role of policy variables such as the
exchange rate, taxes, tariffs, subsidies and quotas all of which have their
major impact through the workings of the price system. The fact that market-
clearing prices are determined endogenously in the model allows a much more
realistic specification of the mechanisms by which many policy instruments
affect the economy.

There are a number of other projects in the Bank that have used,
or are using, the sort of computable general equilibrium model being used in
the Sources II project. The first such model was developed by Adelman and
Robinson to study the determinants of the distribution of income in Korea
(RPO 670-06). Since then, models in the same tradition have been built for
Brazil by Lysy and Taylor (RPO 670-09) and (currently) for Malaysia by
Ahluwalia and Lysy (RPO 670-94). However, the model for the Sources II
project is focussed on issues of trade and industrialization rather than on
issues of income distribution.

While the model underlying the Sources II project can be seen as an extension of input-output planning models, it is quite different from the input-output model underlying the Sources I project. The data requirements are significantly greater (involving, in part, the construction of an economy-wide social accounting matrix) and the explicit inclusion of price and policy variables leads to a model which requires significantly more computer software to solve.[1]

II. Applications to Bank Operational Work

All three projects have spun off contributions to operational and policy work within the Bank. With inputs from the division, the Patterns approach has been used in Bank economic work in several countries including India and Sri Lanka. The project has also provided analysis for the past and forthcoming World Development Reports. The Sources I project has become something of a demonstration project for the use of input-output analysis. Division staff have used the approach in Bank missions to Korea and Yugoslavia. A model of Turkey which will provide the core of the comparative model in the Sources II project has been used extensively by EMENA in their analysis of Turkish development prospects over the next five years. Below, an example of how each of the three projects has been used in an operational application will be discussed.

Patterns Project

A recent application of the methodology of the Patterns project was made by Fred Moore (of IDF) for Sri Lanka, working with a country economist from the South Asia region. They used the data base developed for the project

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[1] See also the project on Social Accounting Matrices (RPO 671-27) under the direction of Graham Pyatt and Montek Ahluwalia, both of the DRC.

both to estimate norms they felt were appropriate and to compare the industrial structure of Sri Lanka with those norms. Although they looked at the norm equations that had been estimated as part of the project, they were also able to access the data set directly and, in fact, decided to estimate their own norm equations.

The analysis of the comparative data from the Patterns project permitted a first "rough cut" at determining the distinctive features of Sri Lanka's industrial structure and how it had changed over time. Given the paucity of data for Sri Lanka, it is impossible to do a detailed analysis of Sri Lanka's industrial structure and how it had changed over time. Given the paucity of data for Sri Lanka, it is impossible to do a detailed analysis of industrial structure, relating it to past policy regimes. However, a relatively aggregated comparative analysis does provide a starting point for relating changes in the structure of the economy to past development strategies. While clearly not sufficient for a thorough understanding of the industrial sector, such an analysis does provide a framework for analyzing other scattered data. It also has the major advantage that it can be done quickly and cheaply now that the comparative data are easily accessible.

Sources I Project

In 1977, Y. Kubo and K. Jordan (both of the industry division) worked with the Yugoslav country economists on a basic mission for Yugoslavia. Their first task was to evaluate and complete the necessary input-output data base and then use it to explore the consistency of the Yugoslav plan. In this task, they used the basic input-output model to determine whether the targetted gross outputs and final demands by sectors were consistent given the intermediate goods requirements.

Their second task was to explore the feasibility of the plan, rather than its consistency. The question was not whether the plan targets "added up", but whether they were reasonable given past Yugoslav performance. In this task, they used the "decomposition of growth" analysis developed as part of the Sources I project to determine the past relative contributions to total growth of domestic demand expansion, export expansion, import substitution and change in input-output coefficients. One of their findings was that the planned extent of import substitution appeared much too ambitious, both in aggregate and in individual sectors. In general, while the plan seemed to be internally consistent, their analysis raised a number of questions as to its feasibility.[1]

In judging the "reasonableness" of the plan, comparisons were made of the plan projections with Yugoslav performance in the past. It would also have been very useful to be able to compare Yugoslav actual and planned performance with that in other countries, such as the eight countries in the Sources I project. However, at the time the work was done the comparative data were not available.

Sources II Project

In the past year, K. Derviş and S. Robinson (both of the industry division) have been working on an economy-wide, general equilibrium model of Turkey. The development of such a model of Turkey was discussed with the Region as part of the division's contribution to a plan-review mission to Turkey. In fact, the mission was postponed and the analysis has been used to date in work by the region on: (1) the CPP (Country Program Paper), (2) the program loan application for Turkey, and (3) the joint Bank - IMF negotiations

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1/ The results of the analysis are described in the grey-cover mission report, "Yugoslavia: Self-Management Socialism and the Challenges of Development," Report Number 1615a-YU. The relevant parts are Part III, chapters II, IV, V, and VII and Appendix VIII.

with Turkey. The plan-review mission is currently expected to go to Turkey early next year.

The major issue facing Turkey is the impact of the current foreign-exchange crisis on future growth. A number of important policy questions arise. Should Turkey devalue? By how much? What will be the impact on future growth of not devaluing? By how much and in which sectors can they expand exports? What will be the impact on growth of severe import rationing? How will different policy regimes affect the structure of industry? The analysis focused on these issues, using the general equilibrium model as a framework.[1]

While important, the model exercise was not the only component of the analysis. For example, work was done on the relationship between imports and growth in Turkey over the last twenty years based on data developed for the Sources I project, as well as on the model analysis. As noted above, the data bases developed for both the Patterns and Sources projects are extremely useful for this sort of analysis.

Applications: Conclusions

Experience with these projects yields some lessons on how to disseminate the results of research so that they can be made useful to Bank operations. First, foremost and most obvious, both the region and the researchers must allocate adequate time to the process. In all three of the examples discussed above, the region formally allocated time for country economists to work with members of the division. Second, a particular methodology must be adapted so that it meets the needs of the region. In the Sri Lanka application of the Patterns methodology, new regression equations were estimated. In the Turkey application, the new model had to

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1/ The results of the analysis are described in a paper by Derviş and Robinson, "The Foreign Exchange Gap, Growth and Industrial Strategy in Turkey: 1973-1983".

be integrated with the software from an earlier model so that the region could have the results in a standard format.[1] The need for such adaptation is virtually inevitable and the research should be designed to make the process as simple as possible. For example, the data for the Patterns project have been collected into a data bank that is well documented and accessible to any user.[2] The comparative data from the Sources I project are also being collected in a common format and a software package is available that can be used to manipulate the data quickly and easily.

The fundamental operational justification for these research projects is to develop methodologies that can be used beyond the boundaries of the particular projects and to provide a body of comparative data against which individual country experience can be measured. Repeated applications should not require new research projects, but should evolve as part of the operational support activities arising from the project. For example, the input-output methodology used in the Sources I project was applied to Yugoslavia, which is not one of the countries in the project when the research project was only about half completed. Eventually, the methodology should become part of the standard analytical apparatus of operation work.

III. Future Research

The first priority for the current fiscal year is to complete the Patterns and Sources I projects, both of which are in their final stages. The Sources II project will start up gradually, finally requiring a level of Bank staff involvement comparable to the Patterns and Sources I projects together.

1/ The earlier model, called the Revised Minimum Standard Model (RMSM) is an accounting based model developed in the Economic Analysis and Projections Department.

2/ The data bank is described in a paper by N. Poduval, "Data Bank and Data Management Programs for Analyzing Patterns of Industrial Development."

The Sources II project represents the division's first work in the general area of total factor productivity. To start with, the work will be descriptive both to develop in-house expertise on the theoretical issues surrounding the measurement of total factor productivity and to gain experience in its application. It will very likely prove to be an important area for future research, both at the multi-sector and sub-sector levels.

It is difficult to foretell at this point what should be the mix of levels and issues for analysis in research projects in the future. If the analysis of productivity change and its contribution to growth becomes an important focus, the balance of work will probably shift away from macroeconomic analysis and towards sub-sector work. The integration of multi-sector and sub-sector work may well prove to be a major area of emphasis. The application of multi-sector models such as the input-output model underlying the Sources I project will probably move out of the research phase and become part of the division's work for operational support activities. Operational spinoffs from the Sources II project such as the Turkey model will require more time and resources since the methodology is both newer and more complex.

OFFICE MEMORANDUM

TO: Mr. David L. Gordon, Chairman
Industry and Trade Steering Group

DATE: October 27, 1978

FROM: Barend A. de Vries *Barend de Vries/mr*

SUBJECT: Meeting on Employment and Industrial Development: Issues
Institutions, Small Scale Industry and Interaction with Large
(October 23, 1978)

1.   The meeting discussed the attached papers by Messrs. Anderson
and de Vries reviewing the status of the ongoing Small Enterprise Study,
some other features of the SME sector work and certain ideas about new
topics in SME research.

2.   The discussion of the Small Enterprise Study brought out several
important features:

(a) The Study is complex and comprehensive, and it will require
a great deal of work to synthetize its findings and apply them operationally.
It was suggested that a series of in-depth working sessions would help the
researchers in focussing their work; this might be done in one or more
general sessions, and sessions specifically dealing with the three countries
where the Study is conducting SME surveys (Colombia, India and the Philippines),
with participation of the Regions, CPS and DPS.

(b) The Study should arrive at an assessment of the impact of
alternative policies on the development of small in relation to large industries.
Subsequently, more detailed research might be undertaken on the costs and bene-
fits of alternative policies; future surveys (of the type now being conducted)
might be designed with this in mind.

(c) The Study should also cover SMEs outside the manufacturing sector.

(d) It was hoped that the Study would bring out the dynamic aspects
of the growth of individual industries, e.g., certain classes of small enter-
prise, though large sources of employment at one point in time, may decline in
importance over time; in other cases changes in market conditions or develop-
ments in technology might greatly alter their competitiveness.

(e) A study of small enterprise development could usefully cover
the implications of certain infrastructure programs for demand of products of
SMEs (materials and equipment for education and government buildings were cited
as examples). (It was suggested that this aspect might best be studied under
the Bank's project loans.)

3.   The discussion endorsed several topics for future research:

(a) Cross-country analysis of transaction costs, lending procedures,
bank charges and interest rate policies (see D. Anderson's note).

(b) Cross-country evaluation of effectiveness of institutional
arrangements in support of SME development. This would cover both technical

and technological assistance, as well as training, operational assistance, etc., (see both notes).

     (c) Further industry-focussed research: what can be learned from available literature and experience about the growth path of individual industries; scale requirements and economies; the impact of different market sizes, technological development and development stage of the country on the industry, and vice versa.

Attachments

Cleared by: Messrs. Gordon and Anderson

Dsitribution: Industry and Trade Steering Group

BAdV:vrr

TO: Industry and Trade Research Steering Group   DATE: October 23, 1978

FROM: Dennis Anderson, DEDER

SUBJECT: Small-Scale Enterprise Study

     The attached table provides a country by country summary of the various studies that are being financed by the project, and the approximate completion dates. I believe everyone is now familiar with how we have organized the work—a review of the literature; a comparative analysis of the historical patterns of output, earnings and employment in small and large enterprises in several countries; supplemented by what Ian Little called "boreholes" (enterprise surveys) in selected countries.

     In addition, we have established links with other research institutions. The most promising is one that Mariluz Cortes has established with a Venezuelan team, who are to do a study (out of their own finances) parallel to the one that she is doing in Colombia.

Results Expected

     Most of the relevant policies have been discussed estensively, and also recently endorsed in a Bank Policy and an Issues paper. It is unlikely that we shall say anything new in general terms, regarding, for example, the importance of cost reflecting interest rates; tariffs; export promotion; incentives for subcontracting; infrastructure; and technical assistance and credit. Briefly, it is my hope that three useful things will emerge from the research.

   (1) We can reduce some of the uncertainties behind the policies by providing a fuller description than we have had before about how small enterprises function, their role in providing employment and earnings opportunities at various levels of a country's development, and some of the transformations that take place with urbanization, market growth and changes in factor prices.

   (2) We should emerge with more reliable criterion for identifying and appraising small enterprise projects. Most projects (including those initiated in developing countries) have an "employment creation" objective, and are justified in terms of their apparently low cost per "job created." For a number of reasons we need a new criterion based on the expected capacity of these programs to raise earnings and output levels of the low income ("target") groups.

   (3) We should also be beginning to emerge with a better understanding of the "demand" for supporting services and credit, and also of some of the barriers to widening the credit operations of development and commercial banks towards small enterprises. (Development and commercial banking is growing very fast in most countries; but the percentage of lending to activities employing most of the labor outside agriculture is extremely small.)

Possible Future Proposals

(1)   I believe we need to initiate a cross-country study of transaction costs, lending procedures, bank service charges and interest rate policies. Some countries have introduced fairly innovative credit lines and an evaluation of them would be desirable in the interests of improving our understanding of the problems of widening access to institutional credit.

(2)   Similarly, a cross-country evaluation of technical assistance and other programs would seem desirable.

(3)   On completion of the present phase of our research, surveys into more industries are required, again to improve our understanding of some of the transformations that take place within the manufacturing sector. (Our present surveys are naturally covering only a limited range of industries at the five digit level--see table.)

Distribution: Messrs. Balassa, Fuchs, Gulhati, Moore, Richardson, Waide
and Westphal

cc: Mr. David L. Gordon
    Mr. B. de Vries
    Mr. B. B. King
    Mr. E. Stoutjesdijk
    Mr. M. W. Leiserson
    Mr. D. Mazumdar
    Ms. M. Cortes

TABLE

Summary of Studies Being Undertaken
as Part of RPO on Small Enterprise Development

Country/Subject	Expected Completion Date
Korea and Taiwan	
"Desk study." Examines changes over time of outputs, employment, labor intensities and efficiencies of small, medium and large enterprises; urban-rural contrasts; demand linkages	Preliminary draft available.
Japan	
Historical study of role of small enterprise in Japan's economy; links to agricultural and industrial development; analysis of institutional framework and policies adopted.	Preliminary draft available.
Colombia	
(1) Study of SSE development over time and between regions; birth and death rates of small enterprises; labor intensities of large and small; regional and urban-rural contrasts.	Preliminary draft available.
(2) Survey of SSEs in the mechanical engineering sector (agricultural implements, pumps and compressors, cookers and ovens). This part of the survey is now done, and is to be extended in the next six months to include surveys in textiles, and various food processing activities (milk and dairy and bakeries).	July 1979.
India	
(1) Case study of role of SSEs in the Indian economy, with special emphasis on regional differences. An in-depth study of the textile industry.	July 1979.
(2) Survey of four industries in Delhi-Western U.P. Machine tools, shoes, printing, soap.	July 1979.

Country/Subject	Expected Completion Date

India

    (3) Survey of 3-4 industries in Eastern U.P. Probably metal products, cotton weaving <u>and</u> one or two of the following: bakery products, wood products, machine tools.   September 1979.

Philippines

    (1) Study of SSE development over time and between regions, in relation to industrialization and agricultural policies persued. Survey to establish enterprise birth, growth and failure rates.   March 1979.

    (2) Evaluation of credit and technical assistance programs, supplemented by interviews with 100 enterprises and with the branch level staff of commercial and development banks.   March 1979.

Nigeria

    "Desk reviews" of quality of existing information on SSEs. Study is to examine patterns of output and employment and other characteristics of SSEs in Kano district. (The only area for which detailed information are available.)   November 78.

Africa

    Desk review of literature and information on SSEs in various countries (Egypt, Kenya, Sierra Leone, Nigeria, Ghana and others).   January 1979.

Other Studies in Progress

    (1) Review of Literature.   July 1979.

    (2) Methods of estimating costs and benefits of SSE projects involving credit and technical assistance.   September 1979.

    (3) Collaboration with other research institutions in Venezuela; possible extension of SSE research in Philippines as part of the technical assistance component of an Urban Development Project; small survey of rural industries in Mexico, as part of supervision of PIDER II project (collaboration with CPS).   Undetermined.

EMPLOYMENT AND INDUSTRIAL DEVELOPMENT:
ISSUES, INSTITUTIONS, SMALL SCALE INDUSTRY AND INTERACTION WITH LARGE

1.   Ongoing Research. New research initiatives in this area will have
to await identification of major gaps in the ongoing Little-Anderson SSE
research project. (Mr. Anderson will report on the status of this project.)
I would expect that more systematic work will be needed on the efficiency of
SSE, although the project will generate some data and analysis on this topic.
This note deals with major issues concerning the employment effects of
industrialization confronted by industrial sector work and on which new
research not included in current research projects is needed.

2.   ;   Balance Between Small and Large Industry. Industrial sector work
now benefits from an increasing amount of data on SME economics (firm size
distribution by industry, labor intensity, capital efficiency, etc.), but it
has no comparative framework within which to judge whether a country has gone
too far or done too little in small industry or, conversely, in capital
intensive large scale industry. As a proxy we try to test the adequacy and
effectiveness of SME policies and institutions in order to judge whether
enough is being done for industrial employment creation. We analyze capital-
favoring biases in industrial and trade policies, as well as the viability
of specific large scale industrial investments in order to judge whether a
country is leaning too heavily toward the latter. These types of analyses should
usefully be supplemented by more systematic work on what constitutes a proper
balance between large and small scale industry, and what policy instruments
are effective in strengthening the linkages between these two. Research on
industrial development patterns (cross-country analysis allowing for different
size, orientation and stage of development) throws light on "norms" for
industrial output, investment, composition and trade in manufactures. This
research, however, was not designed to give guidance on what is a proper
balance between light and heavy industries and among industries in which large
or small firms dominate.

3.   In this context research should also be undertaken on the indirect
employment benefits of capital intensive industrial projects, the way their
design can be adopted toward increasing the employment elasticity and, more
broadly, the way in which these projects have fitted into countries' industrial
and employment strategies.

4.   Technology. Our research on technology -- substitution of labor for
capital -- has been focussed mainly on choice in a few specific industries,
viz., mechanical and textiles. The research on textiles has an operational
orientation, but it is too early to say what in fact will be its practical
impact.

5.   In small industry (SSI) we face a broader question, namely, what
difference, if any, would better information on technological choices make in
investment design. We are interested in this question because we want to make

sure (a) that SSI entrepreneurs have adequate assistance (including informa-
tion) in making sensible investment decisions and running their plant and
(b) that "indigenous" and low-capital technology gets a reasonable chance.
Ultimately, we are interested in seeing that the involvement of intermediaries
(our borrowers) in SSI extends to technological/technical assistance and makes
use of this assistance in its own sub-project appraisal process.

6.   IDFD earlier made a research proposal which would have tested the
effectiveness of technological assistance and of the local and external
institutions delivering it. The Research Committee asked for a revision of
the proposal, pending further elaboration making the methodology more precise.
We are now considering some preliminary survey work in the Philippines, and
possibly in other countries, before defining what more research is called for.
The Colombia survey under the Little-Anderson project also has a technological
component which should throw light on this issue. In my view, this continues
to be an important area for considering new research.

7.   Effectiveness of SSI Institutions. The institutional set up for
technological/technical assistance is a part of a broader network of insti-
tutions, dealing with loan and equity financing, management, industrial
extension, worker training, etc. The Bank makes use of these institutions
in extending its assistance to SSEs. Since we are now gaining experience on
SSE financing in several countries (but still have a long way to go toward
our objective), we should benefit from an assessment of the effectiveness of
these institutions in promoting sound SSE development. This type of research,
in the view of many, should not be hamstrung by a rigid quantitative methodology.

Barend A. de Vries
September 29, 1978

Division of Public and Private Finance
Outline of Divisional Work Program

V. V. Bhatt

I. General Thrust of Work Program

The major areas of the Division's work relate to: (a) the Fiscal Structure, and (b) Financial Structure and Capital Markets. The Fiscal Structure - revenue and debt structures and expenditure and investment patterns - affects the behaviour pattern of households and enterprises and thus has a considerable impact on the functioning of product, factor and financial markets. The financial Structure and Capital Markets have a direct impact on the mobilisation, allocation and use of real resources. Both the Fiscal and Financial Structures condition not only the patterns of saving, investment and output, but also have an impact on income and wealth distribution.

Since fiscal-financial structure and policies have a pervasive impact on the pace and pattern of development, and since these constitute two major policy instruments, research and policy-oriented studies in these areas have direct relevance for the regional and operational departments of the World Bank (particularly with regard to their policy dialogue with the LDCs) as well as the policy makers in the LDCs.

II. Research

A. Fiscal Structure

There are two specific research projects relating to the fiscal structure: Public Expenditures Study (RPO 670-96) and the Public Enterprises Study (RPO 671-71). The first relates to the distributional impact of public expenditures in Malaysia; this study is largely completed

and is currently being edited for publication as a monograph. Several research papers based on the data specially collected for this study are under preparation.

The second study relates to the Management and Organisational Structures of Public Sector Manufacturing Enterprises. For a variety of objectives, governments in the LDCs have entered the field of industry. The efficiency of these enterprises in relation to the explicit or implicit objectives would depend on their managerial and organizational structures and the policy environment in which they operate. The broad purpose of this study is to identify the nature and characteristics of the structures and policy environment that are consistent with the efficiency and growth of such enterprises. The pilot phase of the study - to be completed by June 1980 - concentrates on public enterprises in India, Yugoslavia, Egypt and Italy. The second phase of the project would be undertaken in FY81.

B. Financial Structure and Capital Markets

In this area, there are five inter-related research projects: Capital Market Imperfections and Economic Development (RPO 671-69), Commercial Bank Behaviour (RPO 671-25), Informal Credit Markets (RPO 671-65), Impact of Social Security Institutions on Resource Mobilization and Allocation (ECDPF85) and Financial Structure and Technology Policy (ECDPF93).

The Capital Market Imperfections Study seeks to relate market imperfections to real resource costs of lending and borrowing. These transactions costs are the crucial variable which accounts for the fragmentation and segmentation of the LDC capital markets. The broad

purpose is to identify the nature and the characteristics of financial innovations and policy interventions that reduce these costs and thus lower the costs of lending and borrowing and narrow the interest rate differentials. Such progressive integration of the capital markets would remove the bias of the financial structure against the traditional sector and the sector of small enterprise and thus have favourable saving, investment, output and distribution effects. The exploratory phase of this project is likely to be completed by June 1979 and the second phase by June 1981.

Three dominating parts of the capital markets in the LDCs are: (a) <u>Commercial Banks</u>, (b) <u>Informal Credit Markets</u> and (c) <u>Social Security Institutions</u>. Their impact on the mobilization and allocation of resources and on the integration of capital markets generally is the theme of these research projects. All of them are likely to be completed by September 1979. The second phase of the Informal Credit Markets Project will be completed by June 1981.

The <u>Financial Structure and Technology Policy Project</u> emphasises the link between technical assistance - to promote creative adaptation of modern technology - and reduction of costs of lending and borrowing and seeks to evaluate the impact of Technical Consultancy Services and the Multi-Service Agencies set up by the financial institutions on the promotion of small-medium enterprises in India. This experiment is unique and has relevance for the other LDCs. This project is likely to be completed by June 1980.

C. <u>Research Preparation</u> (RES 02)

Two projects are being formulated in the area of <u>Fiscal</u>

Structure and Policies: (a) Impact of Government Purchase Policy on Promotion of Small Enterprises and Indigenous Technology; and (b) Rural Resource Mobilization. Government purchase policy in several countries - both developed and developing - is deliberately used as a policy instrument for promoting small enterprises and indigenous technology. The broad purpose is to evaluate its effectiveness and to find out under what circumstances it has 'promotional' effects and under what circumstances it has 'protective' and other effects. The other project - Rural Resource Mobilization - seeks to concentrate on the relationship between rural socio-economic institutions and resource mobilization for rural development. The preparatory work is likely to be completed by June 1979 and after that if they appear to be promising, they would be undertaken during FY80 and FY81.

III. Operational Support

There are three types of missions in which the Division participates: (a) Technical Assistance - Advisory; (b) those related to Research; and (c) such missions for which there is a pressing demand from the regions. The missions to Kenya (FY78) and one mission to Indonesia (FY78) relate to (a), while missions to Ivory Coast and Pakistan relate to category (b). (One related to the Capital Market Study and the other to preparatory work on Rural Resource Mobilization.) Missions to Mauritius, Indonesia (second), and Jamaica relate to category (c). Mali mission was a special mission to do preparatory work for subsequent detailed health sector study, relating to Basic Needs Strategy.

We would prefer missions in the (a) and (b) categories; (a) enables us to apply our tentative research results and insights to specific contexts, while (b) helps directly in our research. But it would not be possible to say "no" to some pressing demands by the regions. We are unable to meet even half the demands for this type of mission. However, the category (c) missions are also useful in getting some insights for research and in understanding the specificity of some structural characteristics of the fiscal-financial context.

IV. Participation in WDR II

The Division is also engaged in preparing a background paper as part of the World Development Report II exercise. The Division's study is addressed to the developmental problems of the 25 major mineral-exporting countries. More specifically, it draws attention to the short- and medium-term problems that often beset mineral economies: lagging non-mineral exports and poor export diversification performance, low growth in agricultural production and rising food imports, high rates of inflation, extreme dualism, etc. It offers policy recommendations for meeting these problems and for the long-term development strategies of mineral economies. Work on this study commenced in mid-July 1978 and will be completed by mid-November 1978.

V. Comments

The Division has made it a practice of discussing preliminary research ideas with the IDF, IFC, OED and EDI, and IMF (Central Banking and Fiscal Affairs Departments). It is only after such discussion that

specific research projects are identified. Even after the formulation, the projects are discussed with these departments. The paper on Research Program and Its Rationale was widely distributed for comments, which have been very constructive. Thus, the relevance of the research undertaken is ensured long before the projects are undertaken.

ATTACHMENT I

Operational Support

Man-Weeks - October 1, 1977 to September 30, 1978

	Country	Type of Mission	Field Work-Date	Staff Members	Man-Weeks	Research Ass't.	Man-Weeks
1.	Kenya	Technical Assistance	March 1978	Bhatt/Nankani	20	Saito	15
2.	Indonesia	Technical Assistance	March/April 1978	Kee	10		
3.	Ivory Coast	Financial Mission	July/August 1978	Dellalfar	20		
4.	Pakistan	Special Mission	July/August 1978	Ysuf	10		
5.	Indonesia	Basic Economic Mission	Oct./Nov. 1977	Kee	20		
6.	Jamaica	Econmic Updating	Jan/Feb. 1978	Yusuf	12		
7.	Thailand	Bank Economic Mission	November 1977	Meerman	15		
8.	Mauritius	Special Eco. Mission	Jul/Aug. 1978	Kee	12		
9.	Mali	Special		Nankani	10		
	Total				129		15

ATTACHMENT 2

RESOURCE ALLOCATION

MAN-WEEKS (FY79 AND FY80)

	FY79 Staff	FY79 Consultants	FY79 R/A	FY80 Staff	FY80 Consultants	FY80 R/A
I. RPO						
(a) 670-96 (Public Expenditures)	15	18	-	-	18	-
(b) 671-71 (Public Enterprises)	40	60	11	36	60	11
(c) 671-69 (Capital Market Imperfections)	40	16	15	42	20	24
(d) 671-25 (Commercial Bank Behaviour)	9	20	4	-	-	-
(e) 671-65 (Informal Credit Markets)	4	36	4	10	40	4
(f) 671-59 (Small Enterprise Study)	-	-	16	-	-	-
RES02 (a) Rural Resource Mobilization	15	-	-	34	25	11
(b) Government Purchase Policy	8	-	-	25	25	-
Sub-total	131	150	50	137	188	50
II. In-house Studies						
(a) Social Security Institutions (ECDPF85)	4	12	12	-	-	-
(b) Financial Structure and Technology Policy (ECDPF93)	12	70	-	10	50	10
Sub-total	16	82	12	10	50	10
III. Operational Support	125	-	14	125	-	15
IV. WDR II/Special Tasks	16	-	10	16	-	10
V. Miscellaneous (Seminars and CSW)	21	-	6	21	-	6
Total	309	232	92	309	238	91
MAA	21			21		
Total						