

Report No. 12663

# Report on the World Bank Research Program

January 1994

Office of the Vice President, Development Economics and Chief Economist

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LEWIS T. PRESTON  
President

## MEMORANDUM TO THE EXECUTIVE DIRECTORS

Subject: Bank Group Research Program

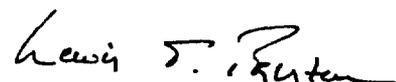
The Bank has a rich and varied research program that sustains its intellectual leadership in the field of development and contributes significantly to the content of the Bank's operations. The Report on the research program prepared for the Executive Directors provides an overview of ongoing and recently completed research activities; describes trends in the composition of research; defines the nature of future research strategy; and as a special topic, explores an aspect of the Bank's research which highlights its contribution to the cause of development.

As has been the practice in the past, the Report is divided into three parts. Part I is devoted to the topic of research capacity building, its importance to the Bank and the manner in which it complements the Bank's own research and lending. This section covers the several different facets of capacity building from the creation of research centers, the financing of regional conferences, to the provision of scholarships and Visiting Research Fellowships.

The current trends in Bank research and some of the major findings are discussed in Part II. This section indicates how research has been affected by the reorganization and the forming of the central vice presidencies. It also brings out the strength and productivity of the research effort in core fields such as poverty as well as the fruitfulness of the work on the relatively new field, the economics of transition.

Future research directions are detailed in Part III. The themes sketched there reveal both the continuing focus on issues that are central to the Bank's mission as well as the flexibility with which the Bank is responding to new challenges.

At a time when the pivotal role of knowledge in promoting development has become even more significant, the importance of the Bank's research and the contribution it can make needs no underlining. I look forward to receiving your views on this program and your sense of whether it fully responds to the challenges we face.





**REPORT ON THE WORLD BANK  
RESEARCH PROGRAM**

FISCAL 1992 AND 1993



### **Bank research—objectives and definition**

The Bank's research program has four basic goals:

- To support all aspects of Bank operations, including the assessment of development progress in member countries.
- To broaden understanding of the development process.
- To improve the Bank's capacity to give policy advice to its members.
- To assist in developing indigenous research capacity in member countries.

This report's definition of research, like that used in recent years, encompasses analytic work designed to produce results with wide applicability across countries or sectors. Bank research, in contrast to academic research, is directed toward analyzing recognized and emerging policy issues and improving the quality of policy advice. Although motivated by policy problems, Bank research addresses longer-term concerns rather than the immediate needs of a particular Bank lending operation or of a particular country or sector report. Its definition does not, therefore, include the economic and sector work and policy analysis carried out by Bank staff intended only to support specific operations in particular countries. Economic and sector work and policy studies take the product of research and adapt it to particular projects or country settings, whereas Bank research contributes to the broader understanding of development processes that underlies future lending operations and policy advice. Both activities—research and economic and sector work—are critical to the design of successful projects and effective policy.



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## Contents

<b>Executive summary</b>	<b>iii</b>
<b>Part I Building research capacity</b>	<b>1</b>
Major regional initiatives	1
Support for conferences to promote regional research	4
Support for collaborative research	5
Training	6
Future directions	8
<b>Part II Review of the Bank's fiscal 1992-93 research program</b>	<b>9</b>
Research funding and management	10
Overview of World Bank research projects and priorities	11
Dissemination of Bank research	22
Evaluations of World Bank research programs	22
<b>Part III Research directions for fiscal 1994 and beyond</b>	<b>25</b>
Research strategy	25
Allocation of research responsibilities	26
New research	27
<b>Notes</b>	<b>33</b>
<b>Appendix tables</b>	<b>37</b>



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## *Executive summary*

Economists have devoted enormous energy to understanding the causes of growth. This attention is entirely appropriate in view of its significance for human welfare worldwide and for developing countries in particular. More than three decades ago, when growth became the object of rigorous analysis, it emerged that capital and labor had a notable part, but smaller than had long been assumed. A sizable share of growth could not be explained by factor inputs. This residual, labeled total factor productivity (TFP), is a measure of our ignorance and was a source of both frustration and opportunity. So long as the principal determinants of growth remained elusive, policies could be based only on informed conjecture rather than on widely acknowledged, empirical proof. At the same time, the enigmatic nature of the growth process has served to focus intellectual energy on understanding it. The accumulated results of several decades of trying are some powerful findings with profound implications for the Bank's operations in developing countries.

By unpacking the residual, economists are perceiving more fully some of the less tangible forces driving growth. Of these, the major ones are education and ideas. Education leads to a steady accumulation of skills. Ideas make possible new and more productive combinations of economic resources and their management. They are not just the stepping stones for realizing an economy's full potential; they define that potential as well.

Ideas that impinge on economic systems arise from a wide range of sources. Perhaps the most effective means of generating ideas or of assim-

ilating them is research, which deliberately sets out to advance the frontiers of usable knowledge or to assimilate ideas in ways that are fruitful in economic terms. Experience suggests that research is one of the most effective ways of productively engaging existing ideas even as it attempts to unlock the door to fresh thinking. The East Asian countries that lead the world in growth performance are conspicuous not only for the quality of their education systems but also for the volume of resources they are pouring into research. Initially much of this research focused on assimilating knowledge from technologically advanced economies. Increasingly, though, East Asia's industrializing nations are emerging as innovators in their own right. For instance, their successful approach to economic management and industrial organization has stimulated a reappraisal of accepted conventions about the role of government and the efficacy of markets.

Research takes many forms, but it is economic research that most engages the World Bank and in which the Bank is equipped to make an international contribution. The value of economic research is enhanced by externalities. It is capable of yielding insights and findings that, harnessed to policy, can raise efficiency across a broad range of activities. Moreover, research offers guidance on techniques of macromanagement crucial for obtaining the stable environment most conducive to growth.

Since it was founded, the Bank has invested substantial resources in understanding the dynamics of development. This learning has been

shared with the Bank's clients using a variety of channels, most notably the policy dialogue connected with economic and sector work and lending operations. Findings from the Bank's research that are most impressive and relevant to policy are described in these periodic reports on the Bank research program. Others are reported at regular intervals through the Bank's research journals, in other publications, and in newsletters.

The accumulated results of this research have provided an empirical base on which policymakers can rely with some confidence. The conduct of research and the dissemination of its results by the Bank have been supplemented by parallel efforts to create indigenous research capacity in client countries. The goal is to help countries acquire the tools to do their own research and to meet needs that cannot easily be satisfied from external sources alone. Local researchers and institutes are better able to marshal the information on culture, institutions, and behavior needed to accurately frame hypotheses and interpret results.

The Bank's efforts to engender research capacity among its developing country clients are the theme of this report, and are discussed in Part I. Part II presents the highlights of the fiscal 1992 and 1993 research program and summarizes key results. The report concludes with a section outlining the direction for Bank research over the next few years.

### Capacity building

The Bank has used a mix of approaches to build research capacity. These are:

- Financing organizations to spur domestic research and to serve as nodes for local research networks that can support the exchange of views through workshops, publication, and other means. The most notable and successful example of these is the African Economic Research Center (AERC). Established in 1988 with funding from six international and bilateral agencies, including the World Bank, the Nairobi-based AERC has emerged as one of the leading promoters of research activity in Africa. It has encouraged networking and cooperation among researchers and helped anchor a system based on peer review and positive reinforcement that leads researchers from proposal stage to publication. AERC has sponsored bi-annual workshops that bring together African and foreign scholars, thereby stimulating productive debate and cooperative research. On a limited scale, AERC has supported training through the-

sis research grants as a means of encouraging graduate-level work in African universities. By all accounts, AERC has met if not exceeded its objectives. The creation of the center has been described by one reviewer as "a timely and precisely targeted response to the crisis confronting the economics profession in Africa."

- Sponsoring conferences to bring together scholars from developing countries and to accelerate research, raise standards, and reinforce dissemination efforts. The Bank has been active in Latin America and Africa. For instance, it has provided funding for the Latin American meetings of the Econometric Society, which bring together some of the best work on applied economics, primarily by researchers from the region but including contributions by academics from North America, Europe, and Asia. The meetings not only serve to upgrade research, they also contribute to the training of future generations of economists.

- Supporting collaborative research projects with researchers and research institutes in developing countries. Such collaboration has a training and dissemination function as well. With regard to the former, the Bank has made significant headway especially through some of its large, survey-based research projects. One example is the Indonesian Resource Mobilization Study being conducted jointly with the University of Indonesia and the RAND Corporation. A second is an exercise to measure and explain industrial productivity in China. In both cases training for local researchers in the design and use of survey instruments has been an important additional benefit.

- Inviting scholars from around the world to join ongoing research and to draw on the Bank's substantial experience in the field of development and its large fund of data. The Visiting Research Fellows Program, which brings scholars from Part II as well as Part I countries to the Bank for several months to conduct research, is the principal example. It is now in its fifth year. A recently completed evaluation strongly commends the program and suggests ways of increasing the benefits from it.

- Sponsoring training programs, especially through the Economic Development Institute (EDI), to sharpen awareness among policymakers of how research can improve the quality of decisions. EDI has continued to pursue innovative approaches to training. Most recently it initiated a program to bring staff members of central banks and ministries of finance to Columbia University for a one-year master's degree program in eco-

conomic management, following which they serve a six-month internship at the Bank or the IMF. In addition to EDI's efforts, summer internships and training fellowships provided by the Bank are helping large numbers of Part II country nationals acquire the tools of research.

### The research program: 1992–93

The review of the Bank's research program in fiscal 1992 and fiscal 1993 in Part II of this report highlights both the continuity and the changing emphasis of the Bank's work: the challenges and, most centrally, the long-term issues and persistent problems that face policymakers in developing countries. To deal with this fluidity in the work requires a flexibility in resources and organization different from that evident in the Bank's operations programs. It is reflected in the allocation of resources across divisions and topics in fiscal 1992–93. Brief references to the type of findings emerging from research constitute the bulk of this section, which concludes with summaries of the fiscal 1992–93 evaluations of various facets of the research program.

In the 1990s, as economic and sector work has increased, the relative share of research and policy in the Bank's analytical work has slowly declined. Research constituted about 14 percent of the Bank's analytical work in fiscal 1992–93 compared with over 16 percent in fiscal 1990–91; economic and sector work consumed 63 percent, and policy work another 23 percent of the total. The separation of OSP from PRE in fiscal 1992 and the Bank reorganization in fiscal 1993 resulted in further consolidation of research in the Development Economics Vice Presidency (DEC), increasing its share from 46 to 53 to 63 percent from fiscal 1991 through fiscal 1993. The reorganization is also reflected in the sharp drop in operational staff time devoted to research, especially in the technical departments.

Among the various areas of research, the shares of poverty and of closely related human resources, private sector development, and the environment have all increased. Meanwhile, as a number of major activities have approached completion, research on adjustment, trade, and debt has diminished, although it retains the largest share of Bank financing for research.

Over 43 percent of external funding for research was devoted to environment-related issues in fiscal 1993. This was followed by private sector development and economic management, with 22 percent and 16 percent respectively. A notable

development was the doubling in the volume of external funding between fiscal 1992 and fiscal 1993 from \$2.7 million to \$5.5 million, with resources for research on environmental issues and the private sector rising threefold. Investigation of private sector development was spurred by changes taking place in Eastern Europe and the former Soviet Union. Although the sectoral vice presidencies absorbed two-thirds of external funding, their share was down substantially from the 95 percent level of 1992, reflecting the shift of research to DEC.

The encouragement given to small-scale, short-duration research ventures that enable the Bank to cover a broader range of relevant analytic and empirical issues has altered the composition of the Research Support Budget (RSB) portfolio. The number of projects below the \$100,000 range tripled between fiscal 1991 and fiscal 1993, while the expenditure on this category rose twofold to \$2.5 million.

The research on poverty alleviation has responded to tightening government budgets through the development of strategies to more effectively target social expenditures to the most needy. And investigations into the results of the range of activities to reduce income instability have produced important findings about the relative effectiveness and indirect costs of strategies used in the household, the community, and the private and public sectors. Research on the range of income security measures for old age finds that a mandatory retirement savings component of such systems is seldom in place—and could provide greater and more equitable benefits to pensioners while alleviating fiscal burdens.

A major factor in the ability of households to adapt to economic crisis is the human capital—education, training, experience, and health—possessed by household members. Allocation of public health funding, interactions between health and education programs, private versus public provision of services, and the successes and failures of programs directed to girls and women were studied. The importance of the interactions between the factors that influence human capital development becomes clear in the findings of two critical studies, one on the roles of public and private schools, the other on the education of girls. Both prescribe a comprehensive package of reforms or activities that do not, individually, significantly affect outcomes, but, when combined, greatly improve educational outcomes. Similarly, infrastructure research on the interaction between

water, sanitation, and health care systems found that the benefits from a comprehensive strategy across the three sectors were much greater than the sum of the outcomes from independently planned expenditures on the three sectors.

Research on transitional economies ranges across a wide variety of issues, but at its heart is the work on the establishment and growth of the private sector, on social programs to protect labor and households during the transition, and on the reform of government to affect economic management in a manner consistent with the emergence of private markets. Many studies are beginning to document the difficulties, but they also find signs of hope. In Poland, consistent policy signals about privatization have begun to improve efficiency in public enterprises. And in Russia, agricultural reform is showing positive results, as regional price differences decline and integrated markets emerge. However, research shows that more comprehensive price reform must follow if the improvements are to continue.

In Eastern Europe and the former Soviet Union environmental problems and conservation of natural resources are pressing concerns. These countries have joined the international community in raising questions about the most effective means to staunch pollution and about the most effective policies—whether regulation, tax, or market interventions—to preserve natural resources without reducing economic growth. The findings of recent research do not provide easy answers: studies on openness to trade and on economic growth found that both have been associated with increases in pollution.

On trade and debt issues the Bank has been fruitfully involved in investigating the potential benefits of regional, bilateral, and unilateral liberalization actions. Similarly cooperative efforts to reduce the cost of debt are required to ensure creditor participation, and the components of such a cooperative plan were defined during this period.

The Bank's research has exerted a marked influence on its operations, as was described in the Research Report for 1990. The impact of Bank research on audiences outside the Bank, as described in the fiscal 1991 Report, is in great part a function of the success of the related dissemination efforts. The Bank has worked across a number of fronts to increase those successes in the past two years. The results of the evaluation of the Bank's two economic journals, summarized in the fiscal 1991 Research Report, have been reflected in

changes in the selection of articles and the mode of presentation and in a marketing drive to enlarge the journals' readership. This doubled the number of paying subscribers and tripled complimentary subscriptions in developing countries.

To encourage researchers to give thought at the start of the project cycle to the dissemination of findings, the Research Committee requires that each proposal present detailed dissemination plans. Many projects now explicitly allocate funds for seminars. Further, to target the limited dissemination funds most effectively, the Research Committee decided that conferences supported by RSB funds should, in general, be held in developing countries. An encouraging side effect of this decision is the inducement that holding conferences in developing countries provides for translation and overseas publication of conference proceedings. To further efforts to reach Part II audiences, the Research Committee also decided to provide cofinancing for translation of important research output.

Aside from the analytical conclusions, one of the valuable results of many Bank-financed research ventures is the wealth of data obtained. Very often the data set is unique and useful for testing a range of hypotheses. To broaden the benefits of that information and make it more widely available, since fiscal 1992 research project managers have been explicitly required to clean, catalog, and publicize all data that are collected and to make them available to interested researchers outside the Bank. Given the paucity of large data sets for most developing countries, access to this information should greatly increase the potential for empirical research. Technology that allows a vast amount of data to be encoded onto one or a few diskettes greatly simplifies dissemination while cutting its cost.

As in the past, the *World Development Report* remains one of the most powerful vehicles for disseminating the knowledge and policy conclusions derived from the Bank's research and its operations. It reflects the mature understanding of a field and is designed to be accessible to a wide audience. The Bank is seeking to achieve similar results with a series of Policy Research Reports. The first of these is the study of *The East Asian Miracle*, which delves engagingly into the policies and institutions responsible for one of the most startling economic phenomena of the century. Future reports will cover adjustment in Africa and systems of old age security.

## Future directions

In an age in which information and ideas are seen as increasingly pivotal, the Bank's success in promoting development will be inextricably linked with its ability to remain at the forefront of thinking on development. The environment in which the Bank operates in the future may be a more difficult one, and expectations as to what the Bank must achieve are bound to be higher. Under these circumstances the need to sustain intellectual excellence and support quality research will be more acute.

In line with Bank policy, the strategy for future research reaffirms many of the priorities of the recent past, the main ones being poverty and human resources, environmental issues, and the transition in socialist economies. Where necessary these have been suitably reoriented in line with changing perceptions of development imperatives. The strategy underlying the research described in this section is defined by four principal and interconnected themes.

The first relates to transition by socialist economies from a system based on central planning to one in which the market has a dominant role. Policymakers need to see the conceptual rationale for, and evidence on the practical feasibility of, proposed reforms to improve production efficiency, enterprise structure and governance, household welfare, and the provision of social services. Research can inform the unfolding of this process in Eastern Europe, the former Soviet Union, and East Asia, but also in African countries with poorly developed markets.

The second theme, one that has been receiving sustained attention for some years but remains elusive, is growth. The emergence of new growth theories has rekindled research interest and has drawn attention to human resource development, financial deepening, and public expenditure. Growth, or the lack of it, and the changes introduced by socialist transition strongly affect environment and the incidence of poverty. Hence research in these two areas, which are of particular interest to the Bank, will be closely tied to the work on transition and growth.

The third theme, which intersects the two earlier ones and also has a bearing on poverty alleviation, concerns the respective roles of the public and private sectors. Although the scale of public sector activities needs to be reduced, public enterprises will retain a sizable presence in the economy.

Regulation of some market activities will have an important bearing on efficiency, pricing, and technological change. Thus research will concentrate on mechanisms for increasing the scale and scope of private sector operations, the efficiency of the public sector, and the design of regulatory practices that achieve desired outcomes at the lowest cost.

The fourth and final theme concerns the international economy. With growing economic interdependence and increased mobility of capital and labor, this theme is also taking on renewed significance. The emergence of trade regions and blocs, the evolution of international trading arrangements, and environmental policy that calls for regional or international coordination will be of special significance. Thus research on international economic matters remains integral to the Bank's strategy.

Many aspects of development policy must temper the search for economic efficiency with other social and political concerns. Thus many research questions are being addressed with a broad interdisciplinary mix of analytical techniques. For instance, the approaches to privatization in the transition economies, the forms of corporate governance that are emerging and their efficacy, the state's capacity to regulate industry in a market environment, the design of rural health care, and approaches to environmentally friendly resource use all require the skillful integration of knowledge derived from political economics, sociology, public health, environmental engineering, and institutional economics. Similarly, many aspects of rural development and urbanization can be more fully grasped if economics joins forces with other disciplines.

The perception that working across several disciplinary fields broadens understanding, increases political feasibility, and promotes more accurate and comprehensive policy recommendations has deepened among researchers in the Bank. More research proposals are couched in the language of political economy, and the Research Committee has encouraged this tendency so long as proposals retain acceptable standards of rigor. If the findings from such research are commensurate with the high expectations, it will invigorate research in a number of fields that were previously investigated only with the tools of economics.



# Part I

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## *Building research capacity*

Building local research capacity is the most promising way to attain a fine-grained understanding of how an economy functions and what it needs to rid itself of debilitating inefficiencies. Through a variety of channels, both direct and circuitous, research can affect productivity and growth. Local research stimulates demand for data and can strengthen a country's ability to collect, store, process, and disseminate economic statistics and information. Many market-related activities benefit from an enhanced information base. Increased university-based research can improve the quality of tertiary-level training and not only help to create a "marketplace" of ideas but also stimulate the exchange of ideas.

The Bank uses a broad mix of vehicles to support the building of indigenous research institutions and the assembly of a critical mass of policy analysts, researchers, and administrators equipped with the skills needed in a modern economy. The contribution of research centers such as the Institute Nacional de Administracion in Mexico and the Korea Development Institute demonstrates the benefits to be gained from a strong base of research in economics. Currently the Bank is devoting about 10 percent of the Research Support Budget directly to capacity building. Depending on results from these ongoing initiatives, more can be done in this area, not just in developing the institutional foundations but in conducting collaborative research. Among the approaches the Bank uses to build research capacity are:

- Financing organizations to spur domestic research and to serve as nodes for local research

networks that can support the exchange of views through workshops, publication, and other means.

- Sponsoring conferences to bring together scholars from developing countries and to accelerate research, raise standards, and reinforce dissemination efforts.

- Supporting collaborative research projects with researchers and research institutes in developing countries.

- Inviting scholars from around the world to join ongoing research and to draw on the Bank's substantial experience in the field of development and its large fund of data.

- Sponsoring training programs, especially through the Economic Development Institute (EDI), to sharpen awareness among policymakers of how research can improve the quality of decisions.

### Major regional initiatives

#### *Africa*

Adding to Africa's research capacity is a matter of special urgency because efforts to improve economic prospects on the continent are handicapped by a limited understanding and a paucity of knowledge of the institutions and behaviors governing economic activity. But expanding the scale of research is no easy matter. The pool of research manpower is small, unevenly distributed by country, and continuously depleted by emigration. From the outset, then, any capacity building exercise had to concentrate on the basic foundations of research activity and incorporate the necessary infrastructure of institutes, confer-

ences, journals, a system of peer review, and a degree of consensus on the central issues deserving investigation.

*African Economic Research Consortium (AERC).* AERC was established in 1988 by six international and bilateral agencies and private foundations, including the World Bank, to support economic policy research by locally based professionals in East and southern Africa. Over time, the consortium has acquired a reputation for effectively supporting economic research and other activities to improve the technical skills of local professionals, encouraging regional determination of research priorities, strengthening national institutions concerned with economic research and training, and fostering closer ties between researchers and policymakers (see box 1). The consortium, based in Nairobi, has expanded its donor membership to eleven agencies, the allocation of grants across an increasing number of francophone and anglophone countries, and the types of grants it funds.

During its first phase in 1988–90, AERC identified two major themes for research by African economists—balance of payments policy and domestic financial management. AERC provided forty-one thematic grants to local economists and widened its coverage from East and southern Africa to central and West Africa. Biannual meetings hosted by the consortium now constitute the largest gatherings of professional economists in Sub-Saharan Africa and have succeeded in reviv-

ing regional professional associations, improving the skills of African economists, and facilitating contacts with fellow professionals inside and outside the region. AERC also supports national professional associations and periodic gatherings of economists to identify research priorities, debate policy issues, and distribute research findings and is initiating support of economics training. The consortium has two publications series: a research paper series for disseminating the results of AERC-supported and externally reviewed research, and a special paper series of studies commissioned by the AERC Advisory Committee or its Board.

AERC has provided support, albeit on a limited scale, for training in the form of graduate thesis research grants in economics intended to revive graduate study. Local institutions supported by the consortium are encouraged to collaborate with each other to maximize returns from the limited facilities and teaching assets. A synthesis of the findings of AERC-financed regional studies of the education sector in Africa formed the basis for a strategy for graduate training in economics.

In a second phase covering 1991–94, AERC is concentrating on improving the quality of research, ensuring effective dissemination of research findings, and developing detailed operational plans for graduate training. By enabling African researchers to remain in contact with colleagues across the continent and overseas, AERC is also helping them to sharpen their technical skills and to remain at the forefront of their profes-

### **Box 1 African Economic Research Consortium: A success story**

In an area in which results have often been meager and disappointing, the African Economic Research Consortium (AERC) has accomplished wonders in research capacity building through a program of research stimulation and support.

AERC has promoted networking and cooperation among researchers and helped anchor a system based on peer review and positive reinforcement that leads researchers from proposal stage to publication. Biannual workshops bring together researchers, observers, and foreign experts to help generate a satisfactory final product. The interaction between African scholars and foreign experts is particularly stimulating and productive. Some of the leading researchers on African economies from Europe and North America have been involved in these activities. These meetings foster the development of networks of vertical and horizontal interactions. Training activities are undertaken to buttress the foundations for policy-oriented research. AERC's independence ensures

neutrality on policy issues and freedom in choice of methodology.

Reviews of AERC's performance have been uniformly laudatory. One reviewer calls AERC "a timely and precisely targeted response to the crisis confronting the economics profession in Africa. It [acts] with a minimum of bureaucracy and [makes] extremely effective use of a relatively small amount of resources." Another reviewer says AERC expenditures are tremendously cost-effective: "the stipends are minimal—just the marginal amount needed to enable the recipients to pursue research in their spare and vacation time instead of pursuing other means of surviving on local salaries." And the results are startling: "I have witnessed a spectacular improvement in the standards reached by [AERC-supported] African researchers," another commented. In fact, as one reviewer noted, many AERC members "are capable of providing excellent critiques of the analytical work of the Bank and other international institutions."

sion. Much research is now a shared activity whose lifeblood is continuous communication and collaborative endeavors. AERC is providing technical support and information to researchers seeking to revise their published output for submission to local journals. It has started a collaborative master's program in economics and provides awards for African students writing doctoral theses on their own economies.

AERC is off to a flying start but much remains to be done. To maintain the center's momentum and build on initiatives begun in phase II, the Bank has agreed to fund a third phase for 1994–97.

*Francophone Africa Research Network on Industrial Policies (RESEAU).* Francophone Africa's research infrastructure is also in need of sustained attention. To meet this need for capacity building, the World Bank, together with the International Development Research Centre and the U.S. Agency for International Development (USAID), took up the demanding task of building a research base in francophone Africa with an emphasis on development of analytical skills. RESEAU began life in 1989 as a center for research on industrial policy and protection, attached to the Pan-African Council for the Development of Social Science Research, in Dakar. The network has brought together more than 350 researchers and scholars from twenty-five African countries, with advisors from universities in Belgium, Canada, and France, and has consulted actively with AERC. Local researchers are assisted through semiannual workshops and feedback from fellow researchers during annual general assemblies. Thirteen country studies have been initiated on the structure of protection and incentives, and RESEAU has made important contributions to sectoral knowledge. Local researchers affiliated with the network have begun to give policy issues the searching empirical analysis they require, and standards for evaluating drafts and research proposals have been explicitly enunciated and objectively applied. The first phase of the project ended in June 1993. RESEAU has recently approached the Bank for support for a second, expanded phase.

*African Capacity-Building Initiative (ACBI).* The World Bank joined such international donors as the African Development Bank and the UN Development Programme and twenty-three African nations in financing the ACBI, following its establishment in 1991. The operating arm of ACBI is the African Capacity-Building Foundation (ACBF).

The primary goals of ACBI are to promote capacity building in policy analysis and development management in Sub-Saharan Africa, to encourage the use of African researchers and managers in policy analysis, and to create networks of trained professional and policy analysts. ACBF is designed to play a catalytic role in capacity building by generating and coordinating donor resources across Sub-Saharan Africa. It is planning a pilot effort in long-term collaboration or twinning arrangements between institutions in Africa and in donor countries. To avoid the disappointing outcomes of past twinning arrangements involving OECD's development research and training institutions in Africa, ACBF intends to widen the pool of potential partners to include institutions such as national statistical offices, economic institutes, and business schools.

#### *Middle East and North Africa*

The Middle East and North Africa region has in place a mature infrastructure of universities and trained researchers. Yet the volume of economic research has been modest, due in part to inadequate communication among research teams. In addition, there is sensitivity in regional institutions to the short-term political implications of independent research. Brain drain has also taken a toll. These factors have reduced the influence and effectiveness of economists in the policy debate.

To remedy some of these weaknesses, the Bank and other donors have sought to establish a regionwide network of economic researchers to increase interactions among researchers and highlight the importance of rigorous empirical work. The network can be a channel for funding research and provide a respected forum for open discussion.

To start the process and begin transforming the initiative into a regionally based and regionally managed institution, a first annual regional conference was held in June 1993, attended by more than eighty top economists from inside and outside the region. Papers were presented on topics such as labor markets, economic integration, and the role of the state in economic growth. The conference established the Economic Research Forum, appointed a board of trustees, and selected a managing director. The Forum, based in Cairo and funded by the Bank, the UNDP, the Arab Fund, the ECC, and the Ford Foundation, was founded with a network of approximately 150 Middle Eastern research fellows.

The Bank has approved funding of a second phase to refine the network's structure and to

concentrate research efforts on some major themes, using approaches similar to those that have proven effective elsewhere. A related objective is to develop a transparent and independent process for selecting themes. The second phase will culminate in a regional conference in 1994 that will deal with the changing role of the state. The forum will also sponsor a series of workshops on topics of regionwide relevance to promote development of skills.

#### *New independent states and China and Southeast Asia*

Encouraged by successful developments in Africa and the positive reception of the Economic Research Forum in the Middle East and North Africa region, the Bank is considering two other initiatives: one in the new states of the former Soviet Union and one for China and Southeast Asia.

The Bank has begun working jointly with the Eurasia Foundation to develop a project aimed at strengthening economic policy analysis and research in the newly independent states. The objective is to facilitate the economic transition, to strengthen and reorient the human capital base to the needs of a market-based system, and to transfer some of the organizational capability currently found mainly in Russia to the other independent states. For these countries the problems are not a lack of universities or researchers, but rather an inadequate knowledge of market economies and their mode of functioning. Undeveloped links between research and policy and among researchers are a further complication. The starting point for the project, then, would be to set up mechanisms that would enable young researchers in universities and institutes to gain experience with the research practices and methodologies used in market economies. The principal goal would be to increase the volume of research and associated data gathering that feeds into national economic management.

Southeast Asia is the fastest growing region in the world, and it lacks neither human nor physical capital. It has also embraced research as an important component of stable and rapid economic advance. But economic research in the region, especially in China, remains fragmented, and individual researchers have yet to realize the full benefits of the technical skills they possess. The gains to be sought through capacity building are in research design, standards for framing and testing hypotheses, and the nurturing of linkages between research and policymaking. Researchers also have yet to see themselves as an intellectual

collectivity drawing strength and inspiration from each other's work.

#### **Support for conferences to promote regional research**

To reinforce the capacity building efforts with an institutional focus, the Bank has begun to support regional economic conferences with high visibility, academic status, and strict quality standards. Once they become an integral and valued part of the research scene, such conferences can increase the attractiveness of research and the effectiveness of networking. They also serve as an excellent vehicle for dissemination.

Research grants from the Bank lent support to two regional conferences: the African Economic Issues Conference and the Latin American meetings of the Econometric Society.

#### *African Economic Issues Conference*

The first African Economic Issues Conference, held in Nairobi, Kenya, in 1990, represented the culmination of two years of effort by the Bank and African researchers to improve collaborative research on Africa. The pathbreaking conference brought together African scholars and policymakers, Bank staff, and academics from Europe and the United States. It gave African economists an opportunity to present and discuss professional papers on the macroeconomic concerns of African economies and allowed World Bank economists to disseminate their research findings on Africa.

The success of the first conference encouraged the Bank to support a second round with a \$110,000 grant from the Research Committee in June 1990. To maximize African involvement in conference preparation, the Western Africa Economic Association (WAEA) and Eastern and Southern Africa Economics Association (ESAEA) organized the conference, with the Bank in a major supporting role. Predictably, organizers had to wrestle with problems of cofinancing and administration. The conference, which was held in Abidjan, Côte d'Ivoire, in October 1992, lived up to expectations: participants were well satisfied, the papers were of good quality, and the discussions were fruitful.

In addition to these intellectual benefits, the conference yielded lessons about organization and institution building. The need for careful planning and attention to logistical details was evident. Another lesson was the importance of ensuring the attendance of decisionmakers so that re-

search findings could begin to influence policy. The conference also confirmed the usefulness of such a biannual event in focusing research and disseminating findings through the publication of proceedings and other means, such as the publication of selected articles in the *Journal of African Economies*.

Participants and organizers agreed that the conference should become a regular feature, and planning is under way for the next event, to be held in 1994.

#### *Latin American meetings of the Econometric Society*

Economic research in Latin America is well-developed, is integrated with policy, and draws on a rich base of training and skills, so the purpose of these meetings differs from the more developmental focus of those mentioned above. The Econometric Society acts as an umbrella organization for regional meetings, which bring together some of the best work on applied economics. To support this capacity building effort in Latin America, the Bank's Research Committee approved \$120,000 in 1990, to be disbursed evenly over four years. This is supplemented by \$40,000 provided by the Latin America and the Caribbean Regional Office. The meetings not only serve to upgrade research but also contribute significantly to the training of future generations of Latin American economists. Some 200 to 250 economists attend the meetings from universities and research centers in Latin America, the United States, Canada, Europe, and Asia and from international institutions such as the World Bank, United Nations, International Monetary Fund, and Inter-American Development Bank. The meetings provide Latin American researchers with an opportunity to interact with their peers from other regions and stimulate academic research, which in turn refreshes teaching. They also inform policymakers about the consequences of past actions and about the best course to pursue in the future.

#### **Support for collaborative research**

The Bank fosters research activity through several other channels. The use of consultants in Bank research and economic and sector work has been increasing over the past few years, and local institutes are actively involved in doing field work and analysis. While the overall ratio of consultants to higher-level staff in the Bank has varied from 19 percent to 23 percent during fiscal 1990-93, the ratios in the research area for fiscal 1993 range

from 44 percent in ESD to 60 percent in FPD. Approximately 40 percent of the consultants in research are from Part II countries. Of the 250 or more research projects conducted throughout the Bank in fiscal 1993, about 45—or roughly one in five—involve Part II nationals or institutions. However, as capacity building efforts take effect, the level of participation should increase.

Some of the noteworthy collaborative research includes studies of the economic impact of acquired immune deficiency syndrome (AIDS) in Africa, income security for old age, indigenous people and poverty in Latin America, industrial productivity in China, enterprise behavior in Central and Eastern Europe, and privatization of agricultural support services.

Local researchers have worked closely with Bank staff managing the projects and with consultants, who are usually leading scholars in the field. Regional research institutes have provided data and substantive analytical input. These joint ventures have made possible a significant transfer of skills, directly through training in fieldwork and empirical analysis, and indirectly through interaction between Bank staff, foreign academics, and local researchers. Because Bank research covers such a broad spectrum of topics, the transfer of research findings can expose those involved to a wide range of techniques for conceptualizing and problem solving as well as to empirical methods (see box 2).

#### *The World Bank Visiting Research Fellows Program*

The World Bank Visiting Research Fellows Program was initiated informally in 1988 to give Bank researchers an opportunity to work with senior development researchers from outside the Bank. This informal arrangement was formalized in July 1989. The program is intended to draw the best development research scholars worldwide into the Bank's research activities so that they can contribute to ongoing Bank research and its future direction and enhance the effectiveness of Bank country operations. Fellows are expected to produce publishable research papers on development methods, policies, or issues and to generate research externalities beyond the sponsoring unit by contributing to research efforts and economic work in the Bank's operational departments. Fellows benefit from the Bank's substantial policy experience in the field of development and the availability of rich data sets across sectors and countries. Until 1991 most of the fellows were drawn from Part I countries, but in an effort to

## Box 2 Capacity building by training local researchers

The Indonesian Resource Mobilization Study (IRMS), funded by the RSB, is an example of collaboration with local researchers and development of local research potential by way of a major empirically oriented project. The study is seeking to estimate the impact of user fees on the utilization of primary health services in Indonesia. A major part of the research is being conducted by RAND and Lembaga Demografi, Faculty of Economics, University of Indonesia, which, at the request of the government of Indonesia, conducted the original IRMS.

RAND has developed a multipronged strategy to ensure substantial involvement of Indonesians in this study, the most important element of which is training activities for Indonesian scholars, policymakers, and students. Short-term training of up to ten weeks will be provided at RAND and UCLA for both provincial staff and other participants in the health care system. Seminars and briefings for policymakers will be held in Jakarta, including a research workshop to disseminate findings. RAND is currently training four doctoral and two masters students from Indonesia using the methods and data from the IRMS. An exchange program has also been established with the faculty from the University of Indonesia, under which several faculty members have already spent time at RAND

doing collaborative work on the IRMS. This practice of funding faculty from Indonesia for in-residence training and research will continue. Negotiations are also going on with the School of Public Health in Indonesia to develop a data center and a formal exchange program between the Indonesian institution and RAND and UCLA.

Another study, on improving school effectiveness and efficiency in developing countries—and Jamaica, in particular—has entailed considerable Jamaican involvement from its inception. The survey instruments used in the project were reviewed by government officials in Jamaica and academics at the University of West Indies. A Jamaican consultant was engaged as the principal collaborator, and a small grants competition was organized to encourage Jamaicans to use the data from this project for specific policy analyses. The Jamaican involvement is intended to ensure that the policy prescriptions derived from this project can be used as inputs in the education planning process in Jamaica. In an important effort in capacity building, the project supervisors involved the Ministry of Education and the Planning Institute of Jamaica in making decisions about the review of the small grants program and subsequent awards.

enhance the capacity building aspect of this program, the selection criteria were modified to draw younger, promising, but relatively unestablished development scholars into the program. This effort has been notably successful (see appendix table 8). The fiscal 1994 program continues to reflect this emphasis: fellows have been nominated from such countries as Bangladesh, Colombia, Israel, Poland, and Russia.

So far more than forty people have participated in the program, twenty-two of them Part II country nationals. A recent evaluation of the program, briefly described in Part II of this report, suggests that it is yielding substantial externalities, particularly through the close association of researchers from developing countries with some of the Bank's work.

### Training

Other important research capacity building supported by the World Bank includes the activities of EDI and training and research opportunities that the Bank provides in-house and through fellowships.

#### *Activities of the Economic Development Institute*

EDI trains officials from the Bank's member countries using a variety of courses and seminars

on development policies and planning, project analysis, and management for development. EDI continuously revises its training materials to reflect changing needs and to provide institutions and development professionals with training tools that embody the latest experience of the World Bank on national and sectoral policy issues. During 1992, EDI broadened its program to provide a cross-sectoral perspective on development, highlighting issues related to poverty reduction, women's contributions to development, environmental sustainability, and the facilitation of private sector initiatives.

Under the World Bank Graduate Scholarship Program (WBGSP), EDI has recently initiated a program to bring staff members of central banks and ministries of finance and planning to Columbia University for a one-year master's degree program in economic management. After completing their studies, the participants serve a six-month internship at the Bank or the IMF. The second group of forty students began studies in June 1993. Two similar programs for Sub-Saharan Africa jointly sponsored with the African Capacity-Building Foundation and the African Development Bank will commence in 1994. One is a program for francophone Africa, to be administered by Centre d'Etudes et de Recherche sur le

Développement International (CERDI) in France and jointly sponsored with the African Capacity-Building Foundation and the African Development Bank. A similar program is being discussed for anglophone Africa, to be administered by McGill University in Canada.

In order to improve the quality of training, clearly a capacity building role, EDI is increasingly emphasizing efforts to promote the growth of national and subregional networks of training institutions. Thirteen networks are now functioning, and others are under development in Central and Eastern Europe. EDI is also investigating ways to improve the links between its institution building activities and project-related training carried out under Bank-assisted projects. It manages the preparation and dissemination of book-length manuscripts for use not only in courses and seminars but also to support the self-instruction of mid-level and senior officials. These materials, which are also provided to EDI's partner training institutes in developing countries, serve to raise the quality of their own programs. Among the instructional materials are state-of-the-art manuals on the economic analysis of projects as well as on how the macroeconomic context influences the outcome of projects. An African authors program is designed to satisfy the needs of policy analysts and officials and to do so in a way that will enhance the capacity of African scholars to produce such material themselves.

#### *Fellowship programs*

The Bank also offers fellowships that finance formal education in a range of disciplines through the Robert McNamara Program, the World Bank Graduate Scholarship Program (WBGSP), and the Margaret McNamara Memorial Fund. The Robert McNamara Program was established in 1982 to promote research on economic development. The program is managed by the Economic Development Institute. Ten fellowships of about \$25,000 each are awarded annually to nationals of World Bank member countries. The fellows must spend their fellowship year at a host institution in a World Bank member country other than their country of origin. The exchange of knowledge and experience from industrial to developing countries and vice versa enriches both sides and may stimulate continuing joint interest in finding solutions to the problems of the developing world.

The program serves young academics starting on a research career by enabling them to pursue

research interests without interruption. It also offers mid-career officials an opportunity to expand their horizons and strengthen ties with others working in the field. In 1992, applicants from Africa led the field (39.3 percent) followed by Asia (33 percent) and Europe/Middle East and North Africa (16.6 percent). In the distribution of fellowship awards Europe/Middle East and North Africa accounted for 33.4 percent and Africa and Asia for 22.2 percent each. Men made up 66.3 percent of the fellows, and women made up 33.7 percent—up from 9 percent in the first year of the program. Two-thirds of the fellows came from Part II countries. Although the program is small in scope, it makes an important if modest contribution to research capacity building in both host and originating countries.

EDI also manages the World Bank Graduate Scholarship Program. Funded by the government of Japan, WBGSP supports graduate study leading to a higher degree in a social science field related to development.

The Margaret McNamara Memorial Fund extends grants to women from developing countries who are studying in the United States in fields that benefit women and children. Since 1983 the fund has given grants to twenty-four women from nineteen developing countries. Most of them have returned to pursue a career in their own countries.

#### *Summer interns and other research assistants*

Perhaps more influential from a long-term perspective because of the greater numbers involved is the Bank's summer employment program, which brings in university students to work in various departments of the Bank during the summer. Students of economics, finance, accounting, and statistics are most commonly sought, although training in law, agriculture, environment, information systems, and the social sciences is also in demand. Interns and research assistants must have at least a master's degree, but a good number are already enrolled in doctoral programs. In fiscal 1993, 199 summer assistants were employed throughout the Bank, about 36 percent of them in departments involved in research. It is difficult to calculate their relative contribution to Bank research, but their exposure to the Bank's functions and its rich data bases certainly indirectly contributes to capacity building. Many of these students return to their home countries, some to continue teaching or research that benefits from the practical experience and professional contacts acquired at the Bank.

### **Future directions**

The more we learn about economic development, the clearer it becomes that the assimilation of improved analytical techniques and the skills to design well-conceived economic policies are among the essential ingredients of economic success. The Bank has sought to assist its clients in each of these areas through its research and increasingly by helping countries build indigenous research capacity. This is a time-consuming exercise but one that strongly complements the Bank's research program.

While the Bank can continue to provide guidance on policy through its own research, the complexity of the issues demands that more of the research be done in the countries concerned. Research capacity building is an integral part of the Bank's mission to help countries acquire capital and skills and establish effective institutions and intellectual input. These, in turn, can provide a sound basis for the autonomy in policymaking needed to make economies function more efficiently. A strong research base encourages independent inquiry at the frontiers of knowledge that can lead to significant advancement.

# Part II

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## *Review of the Bank's fiscal 1992–93 research program*

This part of the report reviews the status of the World Bank's research program and indicates areas in which work is in progress or was completed in fiscal 1992 and 1993. It also summarizes the changes in the allocation to Bank research of resources from all funding sources, provides an overview of current areas of emphasis, and describes the results of the most recent evaluations of research activities. This is the first of a biennial series of research reports. Abstracts and lists of reports and publications arising from Bank research projects continue to be distributed annually to the Board of Directors: the current versions are available publicly as the 1992 and 1993 *Abstracts of Current Studies*.

During fiscal 1992–93 the Bank pursued a broad research agenda reflecting both long-established priorities and issues that have acquired urgency in more recent years. Poverty, human resources, infrastructure development, and finance belong to the former group. Transition of socialist economies, growth of the private sector, management of the environment, and the study of new international trading arrangements fall into the latter category.

Identifying ways of alleviating poverty has long been at the core of the Bank's research program, and this quest continues with undiminished vigor. Findings from this research, which have accumulated steadily, are helping to focus the Bank's activities in this crucial area. Research on improving or sustaining the quality of human resources through education and better health care contin-

ues to break new ground and it is closely linked with work on poverty. The relative roles of the public and private sectors in provision of education and health services is a leading topic on the research agenda.

Research on infrastructure is motivated by a recognition of its salience in the development process. Work done on the contribution of infrastructure to development has brought out sharply the need for efficient planning, management, and financing as well as the desirability of an adequate volume of investment. *World Development Report 1994* will not only underscore infrastructure's priority but also collect and synthesize the knowledge on this subject.

In the work being done on finance, the research momentum is unchanged although the focus shifts periodically as issues are resolved and new challenges emerge. Thus the study of the banking crisis is winding down while research on alternative sources of financial resources is on the increase.

Among the newer priorities, the move by socialist economies from plan to market has induced the Bank to embark on some exciting research. Apart from the collection of data to support empirical analysis, the main emphasis is on privatization, the delineation of property rights, and the functioning of private firms; on labor markets and the provision of social services; and on the numerous fiscal and financial changes associated with transition.

Creating a viable private sector will be crucial to the success of the economies undergoing transition, but the need to rethink the scope of public

sector activity and the necessity of fostering a dynamic private industry has broad applicability. Research on this topic, which has expanded rapidly, is rightly seen as buttressing the Bank's efforts at promoting growth of an efficient private sector through lending operations.

The greatly heightened awareness of environmental fragility and the damage caused by industrialization and more intensive resource use has increased recognition of the need for means to achieve environmentally sustainable development. Although research on environmental issues is still at an early stage, it is already yielding interesting results and the flow of usable knowledge seems set to grow at a brisk pace.

Although the prominence of trade, debt, and adjustment on the Bank's agenda has declined in recent years, new approaches to managing debt and the changes in the international trading environment have led to a change in the direction of research. The growing interest in regional trade pacts, the reappraisal of international trade agreements under way for some years, and a heightened concern about the behavior of commodity prices have been responsible for the attention given to trade-related research in the recent past—and the attention is likely to persist at least through the medium term.

### **Research funding and management**

The Bank was restructured in fiscal 1993 to better achieve the overarching objective of poverty reduction, to most effectively support environmentally sustainable development, to enhance human resource investment, to encourage private sector growth and efficiency, and to accommodate the Bank's expanded membership in Europe, Central Asia, and the former Soviet Union. The vice presidency for Sector and Operations Policy (OSP) was replaced by three thematic vice presidencies, which are responsible for providing policy guidance, operational support, and dissemination of "best practice" advice to the regions. Responsibility for research was consolidated to a significant degree in the Development Economics Vice Presidency, unifying micro- and macroeconomic research under a single management.

The Bank's research program is funded from three sources—departmental budgets, the central Research Support Budget (RSB), and outside agencies. The RSB improves the quality of Bank research by subjecting proposals to expert review

and allows the Bank's research program to respond quickly to changing events and priorities by providing year-round professional review and funding of studies. The RSB also supports other activities, such as the annual Conference on Development Economics, the Visiting Research Fellows Program, two research journals—*The World Bank Economic Review* and *The World Bank Research Observer*—and regional research networks.

In the 1990s, as economic and sector work has increased, the relative share of research and policy in the Bank's analytical work has slowly declined. Research in fiscal 1992–93 constituted about 14 percent of the Bank's analytical work compared with over 16 percent in fiscal 1990–91; economic and sector work consumed 63 percent, and policy work another 23 percent of the total (appendix table 1). Most of the research has historically taken place in the Development Economics Vice Presidency. The separation of OSP from PRE in fiscal 1992 and the Bank reorganization in fiscal 1993 resulted in further consolidation of research in DEC, increasing its share from 46 to 53 to 63 percent from fiscal 1991 through fiscal 1993 (appendix tables 2A and B). The reorganization is also reflected in the sharp drop in operational staff time devoted to research, especially in the technical departments.

Among the various areas of research, grouped in accordance with program objective categories, the shares of poverty and human resources, private sector development, and the environment all increased in fiscal 1992–93 (appendix tables 3A and B). Meanwhile, as a number of major activities have approached completion, research on adjustment, trade, and debt has diminished, although it retains the largest share of Bank financing for research.

Appendix tables 4A and B and 5A and B show the distribution of external funding of research across program objectives and departments. Comparison of fiscal 1993 data with data for earlier years is made difficult by the change in the reporting categories for those funds. Nonetheless, it is apparent that research on the environment continued to lead the field in fiscal 1992–93, accounting for over 43 percent of all external funding by fiscal 1993. This was followed by private sector development and economic management, with 22 percent and 16 percent respectively. A notable development was the doubling in the volume of external funding between fiscal 1992 and fiscal 1993 from \$2.7 million to \$5.5 million, with re-

sources for research on environmental issues and the private sector rising threefold. Investigation of private sector development was spurred by changes taking place in Eastern Europe and the former Soviet Union. Although the sectoral vice presidencies absorbed two-thirds of external funding, their share was down substantially from the 95 percent level of 1992, reflecting the shift of research to DEC (appendix tables 5A and B).

The encouragement given to small-scale, short-term research ventures, which enable the Bank to cover a broader range of relevant analytic and empirical issues, has altered the composition of the RSB portfolio. The number of projects below the \$100,000 range tripled between fiscal 1991 and fiscal 1993, while the expenditure on this category rose twofold to \$2.5 million (figure 1). Appendix tables 6A and B and 7A and B provide a profile of RSB funding activities and trends.

During fiscal 1992-93, 169 proposals were submitted for RSB funding, about 45 percent from DECVP, 24 percent from OSP, and 31 percent from the regions and the IFC. Commensurate with the increase in small proposals submitted, approval rates rose from 72 percent in 1991 to 86 percent in fiscal 1993. Funding rates similarly increased, from 40 percent of requests in fiscal 1991 to 53 percent in fiscal 1992 and finally to 66 percent in fiscal 1993. The new disbursement of \$4.45 million in fiscal 1993 was distributed 44 percent to DEC (51 percent in fiscal 1992), 15 percent to the sectoral vice presidencies (25 percent in fiscal 1992), and 41 percent to the regions and the IFC (24 percent in fiscal 1992).

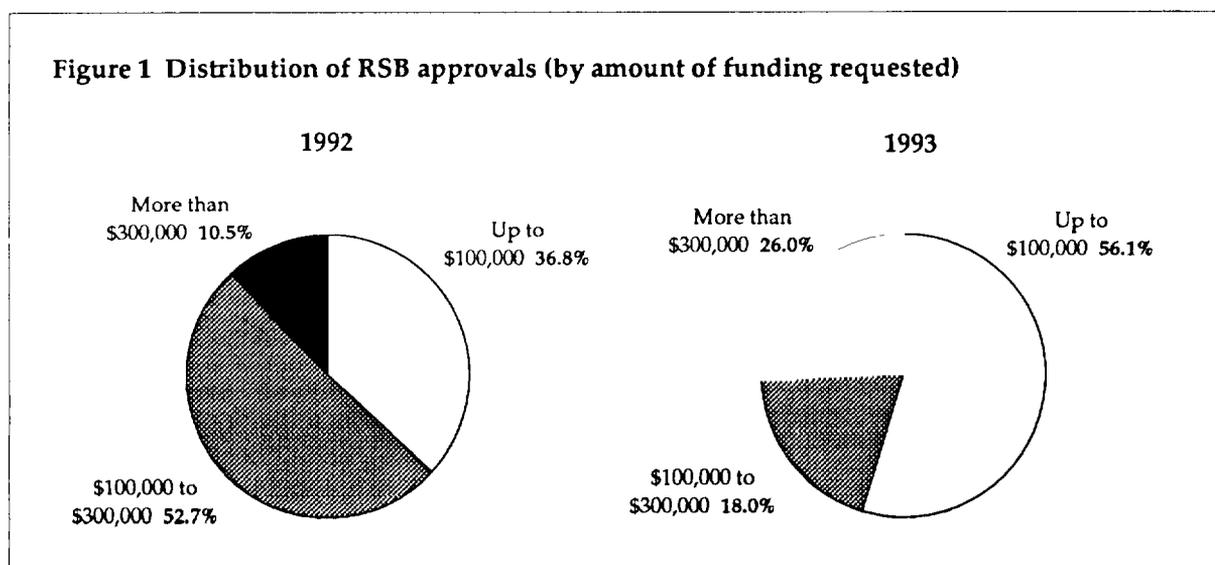
## Overview of World Bank research projects and priorities

Outlined below are the broad themes that have been pursued in research over the past two years. This review is comprehensive: it encompasses projects supported by external, departmental, and RSB funds and includes many of the independent studies undertaken in the regional and sectoral departments, as well as those that constitute the basic framework for the research work program of DEC. Yet it is also selective. It highlights the findings of work completed in this period so as to provide a sample of output from topics at the core of the Bank's work, as well as to indicate progress made in newer directions and on more urgent issues. Thus results from studies on poverty, human resources, infrastructure, and finance are reviewed first, followed by a sample of research on the transition, the private and public sectors, and the environment. The review ends by describing new directions in research on trade, international debt, and adjustment.

### *Poverty, distribution, and social welfare*

Because poverty alleviation is an overarching objective of the Bank, poverty reduction strategies are intrinsic to operational activities. Questions about the most effective strategies and their costs have been addressed by recent Bank research on growth and poverty during adjustment; on household, community, and public insurance strategies to protect the poor against income instability; and on spending on poverty alleviation programs.

**Figure 1 Distribution of RSB approvals (by amount of funding requested)**



One of the confounding factors in the debate about economic growth and poverty reduction is the paucity of data and reliable measures that are comparable across countries. The International Economics Department is compiling proxies for baskets of goods consumed by the poor in different countries to determine the relative cost of basic sustenance and to measure progress in increasing consumption by the poorest. A project concluded in fiscal 1993 designed methods for using household-level data to assess alternative poverty alleviation programs and other policies.<sup>1</sup> A database of poverty measures across countries for 1981–91 is being developed, using uniform poverty measures and purchasing power parities to value currencies. The results to date are disturbing: nearly one of three people in the world lives in poverty, and the number of poor has been growing with population.<sup>2</sup>

The effects of adjustment programs on the living standards of the poor were examined in a major two-phase research study that drew on observations from the long history of poverty alleviation programs in India and Indonesia. The results suggest that labor-intensive rural public works projects have the potential to reach many of the poorest, to protect them from income instability, to develop valuable rural infrastructure, and to limit the leakage of program benefits to the nonpoor.<sup>3</sup> Another project used counterfactual analyses of alternative adjustment packages to confirm that favorable initial conditions, early adjustment, credible policies, and access to external finance were important in protecting the poor during adjustment. Also important is how conflicts about food pricing between agriculture and labor-intensive manufacturing sectors are resolved—and how bureaucratic and import-substituting agents resolve conflicts over trade policy.<sup>4</sup>

Some private and public income transfer systems seek to provide *insurance against income instability* and sustained income loss. A recent study examined the effectiveness of private transfers to offset income fluctuations and how they varied by income group and across developing countries. It produced a variety of empirical results concerning private transfer behavior in a variety of countries. Private transfers were found to have a large risk-mitigating role.<sup>5</sup> The synergy between public health, education, and nutrition measures was explored in another research project that reviewed risk-alleviating strategies in rural communities. Although the study uncovered a range of household and community consumption-smoothing

measures, the pooling of risks was incomplete (particularly for the poor), and public interventions were not easily substituted when community measures were ineffective.<sup>6</sup> In 1987, following Peru's economic crisis, stabilization, and recession, average per capita consumption in Lima dropped by half. Research found that families with higher education and with members overseas were able to adjust to the shocks. But some measures taken to protect consumption in the short term, such as taking children out of school to work and letting the most qualified members emigrate, can have large and prolonged costs. And some private transfer networks weaken as economic conditions worsen or are prolonged. These are some of the conditions under which public transfers were found to be most beneficial.<sup>7</sup>

A Public Economics Division, Policy Research Department, analysis of alternative programs for income security in old age found that most national systems include a redistributive category; some offer tax incentives for retirement savings, but few have a mandatory retirement savings component. The study found that most countries would gain by shifting some of the burden of old-age security from public systems to mandatory retirement savings programs.<sup>8</sup>

Tightening fiscal pressures have made careful targeting of poverty alleviation measures more crucial. Some 250 researchers, policymakers, and practitioners involved in antipoverty programs in developing countries were brought together in a conference jointly sponsored by DEC and OSP. The twenty-one research papers presented provide guidance in evaluating antipoverty programs, identifying beneficiaries, and measuring the costs and benefits of various targeted programs. For example, a study of Hungary's social expenditures showed that the rich received almost twice the social income of the poorest, because of the effects of pensions. The program's protective element was found to result from increased outlays when the economy declined—not from improved targeting of expenditures.<sup>9</sup>

For many indigenous people of Latin America, extreme poverty is a permanent condition. A study by the Latin America Technical Department found large and significant differentials between indigenous populations and others in education, occupation, and earnings. The study recommends a range of measures to reduce these differentials, starting with concerted efforts to increase educational enrollment.<sup>10</sup>

### *Human resources development*

Human resource issues received particular attention in the Bank's research during 1992–93. The Development Economics Vice Presidency highlighted the importance of girls' education in discussions with member countries, calling it the highest-return investment many countries can make. The topic of *World Development Report 1993* is the link between health and development. And Bank research has investigated a range of issues related to human resource development, the economics of education, the efficiency and equity effects of public and private provision of education and health services, female access and returns to education and employment, and determinants of fertility and contraceptive use.

The results of a major interagency study of the economics of education were discussed at an international conference in fiscal 1993. Conference papers made clear that government subsidies for basic education continue to yield important benefits but that sustaining public expenditures at higher levels of education in poorer countries would undermine equity and efficiency. One study found that much latitude remains for improving the cost-effectiveness of schooling policies and recommends increased efforts to inform parents about educational options and policy. Another found that schooling costs remain a substantial impediment to the enrollment of poor children. The conference also outlined current gaps in knowledge and directions for future research.<sup>11</sup>

A cross-country study of the effectiveness of public versus private provision of health and education services found that public expenditures for safe water, sanitation, and basic preventive health care consistently improved health indicators, while public funding of curative care tended to crowd out private services except when effectively directed to the poor. The case for education was mixed, suggesting that joint public-private funding relieves resource constraints and appears to result in more efficient provision of education services.<sup>12</sup> Research on education in several Latin American countries uncovered wide variation in abilities between children in private and public primary schools and high grade-repetition rates and poor subject-matter comprehension in public schools. The findings of this major interdepartmental study support policies for early childhood development programs, new teaching methods to reduce variation among students, increases in expenditures per student at the primary level, and

continued use of quality indicators to assess program success.<sup>13</sup>

Social service expenditures and facilities were examined in a study that accounted for interactions between different programs, drawing on a large Indonesian data set for the 1980s. The study found that proximity to school was important for the enrollment of children of less-educated mothers, that health clinics increased school attendance of 10- to 18-year-old girls, and that the placement of family planning clinics appears to respond to service demand.<sup>14</sup> Regional differences in undernutrition in Indonesia reflect regional differences in income and food pricing; another project found that the poor benefit little from public health expenditures. Both sets of findings suggest that policy needs to focus on increasing spending that benefits Indonesia's poor.<sup>15</sup>

It is difficult to see how to break a cycle of markedly lower earning potential for women which results from a lack of education that is itself a rational response to perceived low income opportunities for women. *Letting Girls Learn*, a report on a major research project examining these issues, outlines approaches for raising girls' schooling that take account of the greater social returns and lesser private returns to educational investments in girls. The difficulty of the prescriptions is that they require a broad range of changes to alleviate constraints, sometimes including more female teachers, new texts, scholarships, and improved facilities. The advantage is that such package approaches do what earlier efforts have not: they significantly increase female enrollment and advancement.<sup>16</sup>

Research launched in fiscal 1992 using recent African household survey data showed that women's education is the strongest predictor of fertility and contraceptive use in all fourteen countries studied. The implications of this finding for family planning policy are ambiguous, however, because current low levels of schooling make it difficult to predict whether large increases in female enrollment would be correlated with commensurate increases in contraceptive use and declines in fertility. Similar methodological quandaries are raised for substantial increases in contraceptive services.<sup>17</sup>

A major interagency study of contraceptive use suggests that policies to limit population growth must be tailored to a country's socioeconomic development. Three countries in different stages of the "fertility transition" demonstrated wide

variation in response of fertility to income, public information on family planning, access to contraceptive services, infant and child mortality, and education.<sup>18</sup> A three-year study examined critical labor market policies and strategies to minimize the social costs of wage and labor reforms by improving the competitive operation of labor markets and increasing the efficiency of public and private spending on education and training.<sup>19</sup>

#### *Infrastructure and urban development*

As more activities are moved from the state to the private sector, the state's role in infrastructure is being reassessed. The Bank's infrastructure research has analyzed returns to infrastructure investment, rules for allocating government expenditures between infrastructure investment and other activities, the extent to which the private sector can take over responsibility in this sector, and the costs in industrial productivity when that investment is insufficient. Water and sanitation systems are the subject of research on willingness to pay for services, private provision and contracting, and water conservation and management.

The broader contribution of infrastructure investments was estimated in a major research project drawing on data from more than 100 developing countries. This work found high marginal productivity effects of transport and telecommunication systems over a ten-to-twenty-year period. The effects appear to be much greater for rapidly developing countries. Further research is being undertaken on the channels for these effects.<sup>20</sup>

Public and private water services are available to households in many developing countries. A project investigating mixed public and private water supply and the willingness to pay for different levels of supply in six countries in Africa, Latin America, and Asia showed that user charges can result in higher-quality water services to consumers while maintaining equitable distribution.<sup>21</sup> Preliminary results of a study of regulatory and institutional performance issues for private water and sanitation services suggest that various contractual relations with private service providers can improve the technical efficiency and quality of services, sometimes at lower cost than public provision.<sup>22</sup> Accounting for the effectiveness of simultaneous improvements in water and sanitation systems in system planning could lead to improvements in health at lower costs than with uncoordinated planning, particularly for specific groups that could benefit from targeted water supply and sanitation strategies.<sup>23</sup> A large coop-

erative program of irrigation research supported by numerous multilateral, national, and nongovernmental organizations led to the establishment of an international technology research program to investigate the modernization of irrigation and drainage systems, the sustainability of land and water use, and the use of improved maintenance technology. The program is supported cooperatively by the World Bank, the UNDP, and bilateral donors.<sup>24</sup>

Research on the performance of the housing sector in developing countries has been constrained by a lack of data and criteria for comparison across countries. A project completed in fiscal 1992 developed a set of key indicators and initiated analysis of differences in performance in fifty-two countries. The subsequent analytical project, completed in fiscal 1993, explains the role of domestic policy and regulation in housing sector development and provides a basis for focusing national housing policies on the most problematic areas.<sup>25</sup>

#### *Financial intermediation*

The banking crises of the 1980s exposed the fragility of financial systems; the accompanying debt crisis focused attention on the need for alternative sources of foreign capital in developing countries. Studies have examined financial system crisis and reform, firm-level demand for capital inflows, and the development of national stock markets to expedite such flows. More narrowly focused research has analyzed the Japanese Main Bank system, the interbank payment systems of industrial countries, and rural financial systems for lessons adaptable to the needs of developing countries.

The bank crises of the 1980s were the catalyst for work on combating financial distress and on options for bank restructuring. One study concluded that successful restructuring requires macroeconomic stability, a sustainable fiscal balance, transparent accounting and legal practices that encourage competition and financial discipline, and effective incentive and closure systems.<sup>26</sup> Five years of research on the characteristics and status of commercial banks in developing countries culminated in the publication in fiscal 1992 of the two-volume *Banking Institutions in Developing Markets*.

Comprehensive interdepartmental research on financial reform found that solvency of the financial sector required, above all else, health in the real sector. Also important were the banks' internal systems and assets—the depth and breadth of

portfolios, reliability of information systems, staff skills, and internal incentive systems. Strategies to strengthen financial institutions should be implemented immediately, followed by steady removal of restrictions on interest rates and portfolio composition.<sup>27</sup>

Foreign investment is important to the development of financial system depth. A recent project found that the evolution of closed-end country funds can help diversify risk and expand foreign investment in developing countries.<sup>28</sup> The Bank's International Economics Department and the Japan Center for International Finance investigated ways of increasing the diversification of foreign investment flows and found that, in each region or country, funds flow to targeted sectors or industries. In Asia, for instance, the largest share of Japanese foreign direct investment went to manufacturing; in Latin America most went to the financial sector. The study indicated varying determinants of foreign investment by sector, suggesting policy shifts needed to induce inflows.<sup>29</sup>

Domestic financial institutions in rural areas of developing countries have been particularly weak. Management autonomy, mobilization of rural deposits, and diversified lending throughout the rural sector are the basic criteria for developing self-sustaining rural financial institutions, according to a nine-country study by the Europe and Central Asia/Middle East and North Africa Technical Department.<sup>30</sup> How financial market liberalization affects small and medium-size firms is crucial in countries in which such firms are the most important employers and sources of competitive growth. In Ghana, liberalization did not increase small firms' access to credit because credit analysis, loan approval, and supervision were centralized to improve bank performance. In African countries in which small firms' access is limited, the study recommends that banks increase branch-level incentives and authority over lending for working capital and that government programs support investment loans to reach the smaller firms.<sup>31</sup>

#### *Transition of the formerly centrally planned economies*

As countries move from central planning to market-based systems, the economic and institutional structures underpinning economic planning unravel. Major research efforts have focused on developing comprehensive and accurate data on the Bank's twenty-four new member countries for use in studies of appropriate macroeconomic

policy, alleviation of the social costs of the transition, labor markets, agricultural and financial sectors, and the characteristics and behavior of successful new private firms.

In fiscal 1992 the Bank intensified its work with *statistical agencies*, including several in the former Soviet Union, and sponsored an international conference on country debt data. By the end of fiscal 1993 IEC had produced estimates of per capita income for many formerly socialist economies, national accounts systems and conversion factors for translating data for these countries into internationally comparable figures, and systematic reporting on external debt data.<sup>32</sup> An assessment of Chinese national accounts by the China and Mongolia Country Department provides evidence that the old accounting system underestimated GNP, particularly in rural areas. The project's findings on statistical biases of the old system, methods for adjusting transition data, and recommendations on methods of data collection and compilation for national statistical agencies will guide a related project on the conversion of statistical systems in the countries of the former Soviet Union.<sup>33</sup>

A major interdisciplinary and interdepartmental study of privatization in Eastern Europe found that political transformation was swift, but that eliminating central planning before an effective system of private property rights was in place did not produce the market signals and incentives that direct efficient reallocation and production. The study also analyzed alternative mechanisms to replace the former Council for Mutual Economic Assistance (CMEA), including a proposed Eastern European Payments Union, and recommended caution in rejecting the payments union proposal without formulating and accepting another option that will prevent bilateralism by default.<sup>34</sup>

Another study of privatization across a wide range of countries of the former CMEA found that privatization appears to work best immediately after macroeconomic stabilization, that some form of employee ownership is a political prerequisite, and that access to a wider group of trading partners is more helpful than reliance on intra-CMEA trade.<sup>35</sup> According to recently completed research of the Cofinancing Department, however, privatization of smaller firms in the fifteen states of the former Soviet Union has been impeded by the lack of a clear and enforced legal system consistent with private property rights, by policies that effectively create differing prices for firm ownership (especially strong

incentives for employee ownership), and a dearth of foreign participation.<sup>36</sup>

The problems for established or emerging *private firms* are equally severe. Surveys of manufacturing firms in the former Czechoslovakia, in Hungary, and in Poland found difficult access to credit, poor economic conditions generally, and large differences in how firms were able to cope with competition from imports and state enterprises.<sup>37</sup>

Decentralizing Russia's fiscal system has emerged as a critical issue in the development of a cohesive federal government in Russia. Research completed in fiscal 1993 found that choices for tax sharing and assignment cannot be sustained without specific assignment of expenditure responsibility to federal and local levels. The project recommends federal responsibility for natural-resource-based revenues and points out areas in which issues of equity and fiscal balance will be particularly critical.<sup>38</sup> Credit and payments systems for trade among countries of the former Soviet Union were developed in a comprehensive analysis of the status and structure of FSU trade. The systems include transformation of quantitative restrictions into import tariffs and export taxes, and adoption of license and quota auctions in cases where voluntary export restraints are in place. The transitional tariffs, taxes, and auction earnings temporarily generate government revenue during a period in which fiscal systems are also being restructured. Mechanisms for monetary coordination among central banks are outlined, allowing quick multilateral settlement among member states. Further analysis of the FSU move toward world energy prices produced estimates of the resulting reduction in the implicit subsidy of oil-importing by oil-exporting states and the broader economic effects of these changes.<sup>39</sup>

It is generally agreed that income equality was high and unemployment low in the formerly socialist economies. Several research projects are examining the effectiveness of *social programs* and *labor market adjustments* during the transition. A study drawing on a rich database in Slovenia has found that the young and well educated have fared best during the transition and that unemployment benefits are negatively associated with reemployment, indicating just one of the tradeoffs in formulating policies both to promote effective adjustment and to protect social welfare.<sup>40</sup>

An interagency project on the reform of *agriculture* addressed a range of problems facing policymakers: property rights, institutional rigidities,

high external debt, nonconvertible currencies, intersectoral pricing, and the need for social safety nets.<sup>41</sup> Research in the Agricultural Policies Division, Agriculture and Natural Resources Department (AGRAP), on food market integration in Russia found a significant reduction in price dispersion and substantial increases in food volumes marketed, but remaining variations in regional prices indicate the need for greater price liberalization, especially at the local level.<sup>42</sup> Research on increasing competition in food processing and marketing in other countries of the former Soviet Union also found evidence of continuing local-level impediments to efficient adjustment.<sup>43</sup>

Ways to develop sound *financial regulations and institutions* were evaluated in a study of banking in transitional economies. The study emphasized the obstacles to longer-run improvement posed by maintaining strategies that were intended for the short-term transition, especially measures affecting the ownership structure and financial status of the former state enterprises.<sup>44</sup> The Bank cosponsored a conference in Tel Aviv in fiscal 1993 on financial aspects of the transition, which reviewed the lessons from research on capital markets, monetary policy, exchange rates, and inflation.<sup>45</sup>

Some countries are showing signs that reforms are beginning to bite. An in-depth study of Polish state-owned enterprises painted a bleak picture in early 1991. High nominal interest rates, adverse selection in credit, and firm-level incentives that had kept real wages low and enterprise employment too high had led to a collapse of profits and thus to dwindling taxes, a growing deficit, and the risk of a resurgence in inflation.<sup>46</sup> But by mid-1992 hard budget constraints, tight credit, and trade liberalization had forced cuts in employment, changes in product mix, efficiency in input use, and lower costs. The research concluded that consistent policies and anticipated privatization led to effective management.<sup>47</sup> These and a broad range of transitional issues are being addressed in further research supported cooperatively by many departments within the Bank.

#### *Private sector development and public sector management*

The comprehensive reform under way in many formerly socialist countries raises a multitude of questions about promoting economic activity by the private sector and reforming the public sector. Most of the studies on the transition cited earlier address these problems. Other work in fiscal 1992

and 1993 on these issues focused on regulatory capacity, financial development, technology policy, small firms, and management of public programs.

The most basic way to increase private sector economic activity is to sell government-owned firms. An analysis of the economic and welfare effects of the privatization of public enterprises in twelve industries in Chile, Malaysia, Mexico, and the United Kingdom found that the sales usually improved the government's fiscal situation and increased productivity, profits, and prices. Thus sometimes consumers gained as a result of competitive pressures, and sometimes they lost as prices were raised. The study also suggests that the costs to employees of employment reductions were usually partly offset by compensatory payments or by equity shares in divested firms.<sup>48</sup>

Many countries have so many state enterprises that simultaneous privatization is not feasible. In some cases, in the interim, state holding companies have managed the state-owned firms. A study of countries' experience with this approach showed that what determines its success is the internal structure of the company, the government's commitment to the approach, and the viability of economic policy.<sup>49</sup>

The importance of the government's role is also noted in a study exploring the factors affecting adoption of the most profitable production techniques. If productivity increases are to be achieved, the study found, government action is critical to promote investment and trade with high-technology multinational firms and to create and maintain appropriate infrastructure.<sup>50</sup>

Research investigating the effects of intellectual property rights protection on technology transfer through U.S. foreign direct investment found that the strength or weakness of a country's system of intellectual protection seems to have a substantial effect on the kinds of technology transferred by many U.S. firms to that country. This holds especially for high-technology industries. The level of protection for intellectual property also seems to influence the composition and extent of U.S. direct investment in the country, although the size of the effects varies greatly with the type of industry.<sup>51</sup>

Considerable evidence indicates that labor intensity and participation by the poor is greatest in small and medium-size firms, yet these firms have been hampered by restricted access to capital and information. A recent study examined the effectiveness of financial, technical, and marketing support programs for smaller firms in Colombia,

Japan, Indonesia, and the Republic of Korea. The research found that the programs were useful only in a few cases in which markets had been in effect closed to small firms—suggesting that attempts at determining the difficulty of access should precede adoption of such programs.<sup>52</sup>

#### *Economic management*

Although macroeconomic policy has received less direct attention as the operational emphasis on structural adjustment has diminished, the debate about optimal economic strategies and institutions continues. Research has examined optimal fiscal policies, options for exchange rate management, and government influence on economic growth.

The spectacular rate of growth in several East Asian economies has generated great interest in the role of government policy. A comprehensive evaluation of the success of eight East Asian countries—supported by the Ministry of Finance of Japan and carried out by PRD, EAP, EDI, and IEC—was completed in fiscal 1993. The study measured the countries' patterns of growth and structural change, described and assessed the influence of strategic actions of their governments, and evaluated the replicability of successful patterns of intervention. It found that economic growth from 1960 to 1990 was high and sustained, its fruits were shared relatively equitably, and government interventions were crucial in these outcomes. The research highlights, however, that the prerequisites for success are so rigorous and the risks of failure so great that policymakers seeking to follow the East Asian path should focus first on getting the basics right and only then consider selecting carefully among proven government interventions.<sup>53</sup>

The experience of most developing countries during the 1970s and 1980s was markedly different than that of the Asian "dragons." Analysis of responses to external shocks in a group of eighteen developing countries showed that those that weathered the shocks most successfully followed flexible but relatively stable monetary, fiscal, and exchange rate policies; monitored the term and maturity of debt relative to returns on investment; and used import controls rarely and briefly.<sup>54</sup>

The findings of another project on the growth effects of a broad set of national policies echo, in some respects, the findings of *The East Asian Miracle* study on a cross-regional basis: well-developed financial systems, infrastructure, and foreign investment channels and nearly universal educa-

tion are prerequisites for long-run growth. But the study also found that they are not enough: negative shocks can overwhelm even the best growth policies, and so high growth rates are seldom found for sustained periods in any specific developing country.<sup>55</sup> The large databases from this project and a related IEC study on sources of productivity growth in eighty-five countries are being prepared for public distribution on computer diskettes.<sup>56</sup>

The effects of fiscal policy on growth and equity have been explored by several research projects during this period. Different international fiscal systems are being examined in a study of tax and expenditure incidence and allocative efficiency in developing countries. Its initial findings provide little support for the claim that tax competition among jurisdictions will result in allocative efficiency in government tax and expenditure policies.<sup>57</sup>

The effects of fiscal incentives on technology adoption and foreign direct investment were examined in three studies using a range of techniques. Tax incentives to encourage research and development and adoption of technically advanced machinery were found to influence some investment decisions, but the broader tax, regulatory, and infrastructure environment was far more important in determining foreign and domestic investment.<sup>58</sup> A similarly weak effect on foreign investment was found in a study of investment in fifty developing countries.<sup>59</sup> A study of corporate income taxes in Pakistan concluded that corporate tax exemptions, holidays, and credits were costly in terms of tax revenue forgone and ineffective in stimulating investment. Equivalent spending on infrastructure did influence investment and resulted in offsetting increases in corporate tax revenues.<sup>60</sup>

The importance of macroeconomic policy is also emphasized in the findings of a study on parallel exchange rate markets which confirm that exchange rate premiums and the perceived overvaluation of the currency grow with budget deficits. Dual exchange rate systems, while doing little to control capital flight, have helped smooth the inflationary impact of maxi-devaluations.<sup>61</sup> A framework for managing exchange rate bands was developed in research completed in fiscal 1993.<sup>62</sup> When direct setting of exchange rates is abandoned, exchange rate auctions can be used to eliminate parallel currency markets. A study of the institutional and economic features of these auctions identified their requirements and rewards.<sup>63</sup>

#### *Environment and natural resources*

Policy dialogue and the lending program of the Bank have been increasingly concerned with the sustainability of economic development, the conservation of natural resources, and the cost-effective reduction of pollution. One visible response to this concern was the creation of the Environmentally Sustainable Development Vice Presidency in the fiscal 1993 reorganization. A research project on environmental policy in international, regional, and domestic arenas has emerged.

Several major reports on environmentally sustainable development were produced in fiscal 1992 and 1993. *World Development Report 1992* explored the links between economic development and the environment. It emphasized that current and accelerated rates of development are sustainable and can be consistent with improving environmental conditions if supported by appropriate policy, program, and institutional shifts. As part of its role in the Global Environment Facility (GEF), the Bank conducts research on global warming and other environmental issues with international implications. Research results and a comprehensive framework for global warming issues were presented at a Bank seminar in May 1992 and at the United Nations Conference on Environment and Development held in Rio de Janeiro in June 1992. The Bank's three-volume *Environmental Assessment Sourcebook* provides practical guidance for designing environmentally sustainable projects. A comprehensive review of the Bank's environmental activities and research each year is contained in the *Annual Report on the Environment*.

Research on natural resources and the environment beyond that to be found in the above sources has focused on data and analytic tools, pollution determinants and regulations, the environmental impact of energy subsidies and policies, land degradation and biodiversity, and agricultural services and technology policies. The regional studies staff in the Africa Technical Department conducted eight studies addressing deforestation, land degradation, threats to wildlife, environmental data, and migratory processes. Research findings of a few of the projects are mentioned briefly below.

Most developing countries have little reliable information about sources or levels of pollution. The Industrial Pollution Projections System is producing comprehensive profiles of industrial pollution for countries, regions, or specific proposed projects. A system prototype has produced pre-

liminary estimates of the intensity of annual toxic emissions across a range of developing countries.<sup>64</sup> Bank research is also developing a framework that integrates environmental accounts with standard economic accounting. The eighteen papers in the volume *Toward Improved Accounting for the Environment* apply the integrated accounting framework as well as work on mineral depreciation, valuation methods, and other conceptual approaches to environmental accounting.<sup>65</sup>

Industrial pollution and strategies to reduce pollution are being examined in several studies in the Policy Research Department. Initial findings show the difficulties policymakers face in analyzing tradeoffs between options and objectives and in achieving significant reductions in pollution. There have been increasing pressures to adopt international standards for environmental regulation, for instance, and to use trade policy to achieve environmental goals. One project on the international aspects of environmental policy and trade policy instruments for reducing pollution culminated in a conference in November 1991. The critical conclusion of the study: trade measures are not the optimal means to address environmental externalities.<sup>66</sup>

But the message from research on the interactions between trade and economic and environmental goals is more complex. A study analyzing the effects of further liberalization of trade in Ghana found that resulting increases in areas under cultivation would generate greater costs in land degradation and declines in future agricultural productivity than gains in traditional measures of efficiency.<sup>67</sup> Similarly, a cross-country study found that more open economies experience larger increases in pollution simply because of output growth. The research had explored an opposite premise, that countries more closed to foreign trade and investment would produce locally products associated with higher levels of toxic emissions and generate higher pollution. Nonetheless, a companion study found that open economies are likely to benefit from the diffusion of energy-efficient equipment from more regulated OECD countries, even when they do not themselves have high environmental standards for production.<sup>68</sup>

Findings on determinants of pollution and effective domestic policy for pollution reduction are similarly mixed. One study completed in fiscal 1993 suggests a pattern of change in pollution characteristics that appears to be determined by

stages of economic growth rather than policy: from organic water pollution to airborne emissions and, finally, to high levels of toxic and carcinogenic pollutants. A project on the effects of plant ownership on compliance with pollution regulations found surprisingly little variation in abatement levels among private, local, multinational, and public firms. The study, drawing on surveys in Bangladesh, India, Indonesia, and Thailand, confirmed that abatement was a function of income and visibility: compliance was higher in high-income localities and countries and in firms with clearly distinguishable emissions.<sup>69</sup> A related study on costs of abatement technology provides stark evidence on the differences in costs and effects of uniform compliance requirements across products and sectors and raises serious policy questions for regulators.<sup>70</sup> Preliminary results of an ongoing study for Poland suggest that price-based incentives are likely to be more effective than the extensive system of regulation and pollution charges already in place.<sup>71</sup> But surveys of clean-technology exporters reveal that environmental regulations in developing countries are the main factors creating demand for their products and services.<sup>72</sup>

A study completed in fiscal 1993 on how greenhouse gas emissions, government revenues, and consumer welfare are influenced by energy subsidies found that lower subsidies would produce positive revenue effects, but that short-term adjustment costs would be substantial in some sectors. The project suggests that external assistance from OECD countries to offset the adjustment costs in developing countries would result in greater reductions in global gas emissions than equivalent-cost increases in domestic carbon taxes in OECD countries.<sup>73</sup> Another study found that the net effects of lower subsidies were beneficial: interfuel substitution was possible, and the inflation-increasing effect of higher energy prices was more than offset by the inflation-reducing effect of lower fiscal deficits.<sup>74</sup> But preliminary findings on interfuel substitution in forty-five urban areas show disappointing results for programs to move poor consumers from wood-based fuels. Although government policy strongly influences energy choice in other areas, the availability of cheap fuelwood has a stronger influence.<sup>75</sup>

A major multinational effort underlies the Bank's research project on integrated land management in Africa, completed in 1993. A study of Kenya's Machakos district investigated the factors that

produced a doubling in per capita agricultural output despite a fivefold increase in population in an area in which land degradation had been a concern fifty years earlier. A combination of market growth and new inputs, technologies, and products, as well as effective channels for national and international information and commerce, created support for effective land management. In Ethiopia, however, political, economic, and social turmoil has prevented investments to increase the carrying capacity of the highlands, and stagnation and erosion have resulted.<sup>76</sup> A study of successful long-term, high-productivity rainfed agriculture in developing countries suggests determinants of success similar to those in Kenya.<sup>77</sup>

Issues for African dryland management differ: lack of knowledge about ecological and economic carrying capacity of the rangelands, diversity of scale, and volatility in climatic factors all complicate the analysis of sustainable policies. A study supported by ODI, ODA, and the Government of Norway is modeling the effects of range management strategies; preliminary findings show that some strategies provide incentives to *increase* herd size.<sup>78</sup>

Agricultural research has focused on government and private provision of agricultural services. A project supported by the French Foreign Ministry, CIRAD (France), DANIDA (Denmark), and the Inter-American Institute for Cooperation in Agriculture finds that many of the functions of agricultural support services now provided in most developing countries by government agencies can be taken up by the private sector or by farmers associations. In many instances, governments should focus on their regulatory functions while facilitating a transfer of service functions to nongovernmental entities. However, some types of agricultural services clearly require public sector delivery and, when the clientele is predominantly poor and very small farmers, the transition to nongovernmental service organizations may require a longer period.<sup>79</sup> Another ongoing study on alleviating high production risks and thus income variability for poorer households suggests that governments may utilize market incentives in the design of insurance programs—so that poor people, who have few effective mechanisms for coping with the risks of drought, can buy the level of insurance that suits their needs through a program that is practically self-financing.<sup>80</sup>

A recently completed study of world food production predicts an encouraging future for cereal consumers: continued growth in supply, low prices, and a decline in the rate of growth of

demand. Caloric consumption is near satisfactory levels for most consumers in developing countries, and diets are diversifying into meat, vegetables, and fruits. In addition, the excessive consumption and imports of grains in the FSU and Central and Eastern European countries will end with the elimination of subsidies and, initially, with income declines during the transition. What is less encouraging is that the picture varies within and across countries. The poorest still lack adequate access to food in most developing countries. And in African countries caloric consumption held almost constant over the past three decades; increased hunger and malnutrition in Africa is predicted.<sup>81</sup>

The conceptual aftermath of the “green revolution” has been a recognition of the immense influence of technological development in international agriculture and a continuing search for policies to narrow the gap in productivity between developing and industrial countries. A major international study supported by six agencies seeks to identify optimal agricultural technology in developing countries and the role that Bank operations can play in technology transfer. The initial focus has been on the least successful areas: the Sub-Saharan livestock sector and the arid and semiarid regions of the subtropics. Preliminary results highlight the extreme variance in the effects of the most common technologies and the resulting difficulty in making appropriate choices.<sup>82</sup>

High-technology approaches are not always effective or desirable, however. Measures of the economic costs of pesticide resistance that accounted for the production and trade impacts of pesticide subsidies showed that integrated pest management, which uses natural predators, shifting planting patterns, and limited pesticides, would reduce external costs while maintaining yields.<sup>83</sup> An interagency project completed in fiscal 1993 on impediments to agricultural productivity growth found a need for national and international investment in agricultural research on new technologies, intellectual property management, and agricultural technology transfer systems—and for institutions to oversee these systems. The findings highlight the necessary lag between investment and returns in agricultural research.<sup>84</sup>

#### *Debt, adjustment, and trade*

During the late 1980s a number of developing countries undertook comprehensive reforms as part of structural adjustment lending programs,

with varying degrees of success. A study of eight adjusting countries examined the political factors influencing reform of a range of macroeconomic policies. Factors contributing to successful adjustment include starting the program soon after an election, assigning responsibility for reform to a politically independent agency, and packaging reform measures to spread the costs across political constituencies. Cross-country analysis of political regimes and inflation revealed that, for middle-income countries, inflation is not systematically higher in democratic regimes than in authoritarian regimes, although for Latin American countries that have switched between authoritarian and democratic governments, inflation does appear to be systematically higher during the democratic phases and in the years around the transition.<sup>85</sup>

The extent and success of adjustment programs in twenty-nine countries in Sub-Saharan Africa during 1987–90 were comprehensively analyzed in a project that found that half the countries showed a positive turnaround in GDP growth in 1987–91 and half did not. Increases in growth rates are clearly associated with improvements in macroeconomic policies. The project suggests that adjustment programs are essential for placing Sub-Saharan Africa on a sustainable long-term growth path, but they alone cannot offset continuing problems in public enterprise performance, exchange rate rigidities, and low levels of investment and savings.<sup>86</sup>

During the late 1980s developing countries carried out commercial debt and debt service reduction (DDSR) operations as part of their response to the debt crisis. Guidelines were developed in IEC to summarize the extent of debt reduction resulting from these usually complex operations as a single measure, termed the “debt reduction equivalent.” Similarly, stripped<sup>87</sup> prices reflecting the value of the corresponding debt outstanding equivalent—and hence comparable to pre-operation market prices as indicators of country creditworthiness—were obtained by adjusting market prices. Research found that DDSR was the right policy approach to a perceived solvency problem, but that the reduction of the debt overhang would not guarantee a significant development effect without a sound policy framework and a significant reduction in uncertainty.

From a financial point of view, despite the deep discounts at which these operations usually take place, financial savings can be expected to be zero at best when realistic counterfactual debt service

scenarios are considered. This expectation results from the voluntary nature of the creditors’ participation and was empirically confirmed in the first five Brady operations. Furthermore, the financial costs of these operations are incurred in the early stages because of the countries’ inability to credibly commit to pay later when they may be overindebted. Two key conditions were identified for minimization of the financial costs of DDSR: (1) a requirement of comprehensive creditor participation, achieved through a concerted bargaining framework, and (2) the offering of an array of options for creditors to choose from. The first eliminates the incentive of each creditor to hold to its claims to benefit from the subsequent rise in price and leads to costs lower than under piecemeal, open market operations. The second adds efficiency to the exchange by catering to the specific characteristics of creditors, who would then require lower compensation as a result. The use of comprehensive menus serve both purposes at once and, in the Brady operations examined, led to implicit buyback prices significantly lower than what would have been obtained in the open market.

Research on rent sharing and license prices under the Multi-Fibre Arrangement (MFA) has strong policy implications because imperfect competition would affect the welfare impacts of the quotas. For U.S. apparel imports preliminary findings suggest that the rents generated by the quotas are shared fairly equally between the developing country exporters and U.S. importers, contrary to the assumption that they are fully captured by the exporters. The study also finds that using Hong Kong license prices to impute license prices for other MFA-constrained countries overestimates license prices. This indicates that the welfare costs of the MFA to developing countries are substantially higher than previously estimated.<sup>88</sup>

Research on industrial competition, productivity, and trade regimes in six developing countries tests the conventional wisdom that protectionist trade regimes reduce manufacturing productivity. The most important finding is that trade liberalization can lead to significant intraindustry improvements in factor productivity and pricing behavior, but can reduce economies of scale.<sup>89</sup> Interest in regional trading blocs is rising as the multilateral system remains stalemated. One research project that examined regional integration agreements concluded that U.S. support for regional blocs is likely to promote them as a major component of the international trading system, that developing countries with liberal trade re-

gimes will benefit most from access to industrial markets, but that small countries without strategic trading advantages from which to negotiate will be left out and will have the most to lose if multilateralism declines.<sup>90</sup> Preliminary results of a study of specific trading arrangements suggest that a free trade agreement between Latin American countries and the United States, for instance, would provide little benefit to most of the Latin countries because of the already low barriers that they face.<sup>91</sup>

Developing countries depend heavily on foreign exchange earnings from primary commodities and so rely on IEC models for projecting commodity supply and prices and the effects of trade interventions. IEC has also developed econometric models for trade in manufactures. The models suggest that simultaneous expansion of manufactures exports in all developing countries could benefit them because they are net importers of manufactures and, as manufactures exports expand, the prices would decline.<sup>92</sup>

Research has found that, contrary to popular belief, most commodity prices do not follow a random walk but have a highly nonlinear relation to stocks of the commodity. When stocks fall to low levels, the ability to dampen price movements is sharply reduced. Preliminary results show that the real interest rate has the strongest influence on commodity prices, suggesting that more emphasis be put on the use of financial market instruments for managing commodity price risk.<sup>93</sup>

### Dissemination of Bank research

The Bank's research has exerted a marked influence on its operations, as was described in the Research Report for 1990. The research has also had a strong impact on audiences outside the Bank who attach value to work on developing countries with a pronounced policy orientation, an aspect described in the fiscal 1991 Report. Research has been disseminated through a host of channels, the most notable being publications, seminars, and conferences. The multiplier effect from dissemination is fully recognized and the Bank has worked ceaselessly at improving its practice in this regard. Two years ago, the Bank commissioned an evaluation of its two economic journals to ascertain the views of the readership. The information garnered has been put to good use in the selection of articles and the mode of presentation. More recently, a marketing drive was launched to enlarge the readership. This proved to be highly successful, doubling the num-

ber of paying subscribers and tripling complimentary subscriptions in developing countries.

To encourage researchers to give thought at the start of the project cycle to the dissemination of findings, the Research Committee requires that each proposal present detailed dissemination plans. Many projects now explicitly allocate funds for seminars. Further, to target the limited dissemination funds most effectively, the Research Committee decided that conferences supported by RSB funds should, in general, be held in developing countries.

An encouraging side effect of holding conferences in developing countries is the inducement it provides for translation and overseas publication of conference proceedings. To further efforts to reach Part II audiences the Research Committee has also decided to provide cofinancing for translation of important research output.

Aside from the findings, one of the valuable results of many Bank-financed research ventures is the wealth of data obtained. Very often the data set is unique and useful for testing a range of hypotheses. To broaden the benefits of that information and make it more widely available, research project managers have been explicitly required since fiscal 1992 to clean and catalog all data that are collected and to make them available to interested researchers outside the Bank. Given the paucity of large data sets for most developing countries, access to this information should greatly increase the potential for empirical research. Technology that allows a vast amount of data to be encoded onto one or a few diskettes greatly simplifies dissemination while cutting its cost.

As in the past, the *World Development Report* remains one of the most powerful vehicles for disseminating the knowledge and policy conclusions derived from the Bank's research as well as operations. It reflects the mature understanding of a field and it is presented so as to be accessible to a wide audience. The Bank is seeking to achieve similar results with a series of Policy Research Reports. The first of these is a study of *The East Asian Miracle*, which delves engagingly into the policies and institutions responsible for one of the most startling economic phenomena of the century. Future reports will cover adjustment in Africa and systems of old age security.

### Evaluations of World Bank research programs

The Bank's research program is evaluated in several ways: through ex ante review of project proposals,

peer review of research papers and books submitted for publication, and evaluation of different aspects of the research program managed by the Research Advisory Staff. The ex post evaluation activities undertaken centrally in fiscal 1992 and 1993 have focused on the large multicountry comparative studies, the last of which was concluded in fiscal 1993, and the Visiting Research Fellows Program, which entered its fifth year in fiscal 1993. The findings of the evaluations are summarized below.

#### *The Comparative Studies Program*

The Comparative Studies Research Series, funded by the Research Support Budget, was introduced in 1984 as an avenue for analysis of crucial policy issues in development economics on a multicountry empirical basis. The studies selected were "The Political Economy of Poverty, Equity, and Growth," "A Comparative Study of the Political Economy of Agricultural Pricing Policies," "The Timing and Sequencing of Trade Liberalization Policy," and "Macroeconomic Policies, Crisis and Growth in the Long Run." A fifth study, "Managing Agricultural Development in Africa," although not formally initiated as part of the program, shared the characteristics with the other four of having a multicountry approach, a long time frame, and a large budget and thus is being evaluated with them. In all these studies, researchers were to apply a common analytical framework to evidence in each of a range of countries, and then synthesize patterns of experience and the results. Each project was comprehensively reviewed prior to funding.

The projects have been evaluated by external researchers who are experts in each of the subject fields. The purpose of the evaluations has been to compare the results of the research with the broadly stated objectives of the program and the specific approved proposals—and to judge the overall merits of the comparative framework.

Evaluators were favorably impressed with the volume of detail gathered through this research and found the country case studies highly informative. They appreciated the effort made to include political and institutional factors in the analysis, although authors often did not pursue this far enough. Opinions differed on the degree to which these studies introduced useful methodological innovations and succeeded in their attempts at quantitative analysis. Clearly some projects achieved more than others. On dissemination, most projects scored highly in terms of publications, workshops, and conferences—although, in

certain instances, the availability of published results was subject to considerable delay.

Evaluators recognized the great potential of the comparative format, but they also underlined the heavy managerial burden, the need for careful and comprehensive planning, and intensive oversight of the country studies throughout the process. The evaluators also cited the intellectually challenging and time-intensive process needed to produce findings that accurately embody the country cases while distilling lessons relevant for other times and places.

The evaluation yielded lessons that are relevant for other exercises of this nature:

- Research proposals and the review process should give attention to methodology but not at the cost of other aspects of the research.
- Analysts and commentators should be chosen to reflect a fairly broad spectrum of thinking on an issue. Authors can benefit from critical commentary at various stages in the project cycle and should be required to respond to the comments made.
- For large and complex projects, careful thought must be given to mechanisms of quality control for the duration of the exercise.
- The resources and time needed to prepare synthesis volumes are sizable and must be allowed for when formulating the project.
- A plan for dissemination must be part of the project, and there must be full commitment to its implementation.

As one evaluator described it, the success of a major comparative study is dependent on satisfying three prerequisites—a well-designed research plan; thorough instructions for the country studies, followed by continued oversight and direction by the project leaders; and limitation of the research topic to a set of straightforward questions amenable to empirical investigation and relevant to policy. In sum, studies of this nature can produce a rich harvest of results and policy advice but require a considerable amount of foresight, oversight, and skill at integration.

#### *The Visiting Research Fellows Program*

The Visiting Research Fellows Program (VRFP), described in Part I of this report, has been formally in place since 1989.

In 1993, in the fifth year after its inception, an evaluation of the program's effectiveness was conducted. Its purpose was threefold: to assess the broader contribution of the program; to judge the extent to which the VRFP meets its objectives; and

to evaluate the contributions of each fellow. Forty research fellows were evaluated, eighteen from industrial countries and twenty-two from developing countries. The fellowships were classified into five broad groups: Energy, Environment, and Natural Resources; Poverty and Social Welfare; Macroeconomic issues—Domestic; Macroeconomic issues—International; and Economic Management and Financial Intermediation. Each group was assigned to a reviewer.

Overall, the evaluators praised the program, especially its flexibility, and recommended its continuation with certain modifications. They appreciated its multidimensional nature, which permits some fellows to collaborate closely with staff on topics of interest and others to pursue their own research agenda. In comparison with similar programs, such as the National Fellows Program of the Hoover Institution, the VRFP was observed to have one significant deficiency, a lack of follow-up. The program office was not always informed about publications generated after the scholar's visit, although there has been increased submission of *ex post* reports in recent years. The evaluators praised the recent move to inviting younger scholars from developing countries, since they can contribute through their specialized knowledge of local institutions and countries. The evaluators pointed out, moreover, that fellows from developing countries can challenge current Bank doctrines and so reduce the danger of intellectual inbreeding. Observations and recommendations of the evaluators on specific aspects of the program are outlined below.

*Selection process.* The nomination and selection processes need to be more transparent and competitive to enlarge the pool of able candidates and ensure a more objective and appropriate selection. Criteria should be equally rigorous for fellows from developing countries. The program might broaden its scope to consider not only academics but such practitioners as government ministers with past academic expertise. Administration of the program should be strengthened through the preparation of well-formulated terms of reference by the nominating departments and prompt submission of reports at the end of the

visit by both the fellow and the host department. The fellowship term should be a minimum of six months to allow fellows to become acquainted with Bank staff and information resources and to ensure useful interactions with Bank staff.

*Research externalities.* Externalities seem to vary substantially and depend on the initiative and personality of individual fellows. In general, bringing scholars to the Bank has made them more aware of the institution's research needs and potential, and the evaluators believe that their presence can only further the Bank's reputation in development economics. There is, however, a need for greater commitment on the part of the host division to ensure that externalities are achieved.

*Quality of output.* Although the reviewers noted significant variation in the value of output produced by the fellows, the fellows have generally produced excellent work of relevance to the Bank and have enhanced the research climate. However, contributions in the field of environment and natural resources were modest, at best. One possible explanation offered was that as socioeconomic analysis of environmental issues in the developing world is still relatively new, many environmental scholars are working on theoretical issues that might not be of direct operational relevance in the Bank. Some reviewers noted, though, that equivalent if not better research output could have been achieved in a university setting and the program might have limited "additionality" in terms of research results in the realm of theory. A different balance of theory and policy analysis should be sought, and publication in premier professional journals should be a secondary concern.

On the whole, the external reviewers were of the opinion that the program was well thought of in the Bank, that plenty of candidates were available for the program, and that the flexibility to bring both fellows who collaborate extensively and those who work relatively independently should be preserved. The reviewers felt that, with recommended modifications, the program should be continued.

# Part III

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## *Research directions for fiscal 1994 and beyond*

### **Research strategy**

The Bank's success in promoting development has rested on providing an enlightened mix of capital, technical knowledge, and policy advice. In an age in which information and ideas are seen as increasingly pivotal, how large a contribution the Bank makes in the future will be inextricably linked with its ability to remain at the forefront of thinking on development. This calls for a commitment to sustaining intellectual excellence which matches—if not exceeds—that of the recent past as the demands on the Bank from old and new clients are likely to increase. At the same time, the environment in which the Bank operates may be a more difficult one, competition could be sharper, and expectations as to what the Bank must achieve are bound to be higher. Under these circumstances the need for quality research that enables the Bank to maintain if not enhance its intellectual leadership will be more acute.

In line with Bank policy, the future research strategy reaffirms many of the priorities of the recent past, such as poverty and human resources, environmental issues, and transition in socialist economies. Where necessary these have been suitably reoriented in line with changing perceptions of development imperatives. The strategy underlying the research described in this section is defined by four principal and interconnected themes, several of which touch directly and indirectly on issues related to poverty.

The first relates to the transition by socialist economies from a system based on central plan-

ning to one in which the market has a dominant role. Many of the reform initiatives in these economies are aimed at introducing market mechanisms and institutions underpinning market transactions. The design of reforms and the analysis of their consequences for production efficiency, enterprise structure and governance, household welfare, and the provision of social services—to name just a few—require empirical policy-oriented research. Such research can inform the unfolding of this process in Eastern Europe, the former Soviet Union, and East Asia, but also in African countries with poorly developed markets.

The second theme, which has been receiving sustained attention for some years but remains inexhaustible, is growth. The emergence of the so-called new growth theories has led to a quickening of research interest and drawn attention to a different set of policy handles—human resource development, financial deepening, and public expenditure. Early results have already begun altering our perspective on the growth process, but a great deal more analytical and empirical work will be needed before the relationships now being assessed are on a firm footing.

Growth, or the lack of it, and the changes introduced by transition in socialist economies strongly affect the incidence of poverty and have large consequences for the environment. Hence research in both poverty and the environment, which are of particular interest to the Bank, will be closely tied to the work on transition and growth.

The third theme, which intersects the two earlier ones, centers on the respective roles of the

public and private sectors. This has attracted a great deal of attention, most notably in the formerly socialist economies but in other countries as well. The general view is that the public sector needs to reduce the scale of its activities, but nevertheless will retain a sizable presence in the economy. Regulation of certain parts of the private economy by public bodies will have an important bearing on efficiency, pricing, and technological change. Thus research will concentrate on mechanisms for increasing the scale and scope of private sector operations, the efficiency of the public sector, and regulatory practices that achieve desired outcomes at the lowest cost.

The fourth and final theme concerns the international economy. With growing economic interdependence and increased mobility of capital and labor, this theme is also taking on renewed significance. Of special note will be the emergence of trade regions and blocs as well as the evolution of various international trading arrangements through the 1990s. Similarly, in a large number of instances environmental policy calls for regional if not worldwide coordination. Thus research on international economic matters remains integral to the Bank's strategy.

Many aspects of development that are being investigated call for a broader, interdisciplinary mix of analytical techniques. For instance, the approaches to privatization in the transition economies, the forms of corporate governance that are emerging and their efficacy, the state's capacity to regulate industry in a market environment, the design of rural health care, and approaches to environmentally friendly resource use all require not just the skillful application of economic concepts but also the selective use of concepts drawn from other social sciences. Only through a juxtaposition of economics and political science can the growth of the private sector in the formerly socialist countries be adequately analyzed. Similarly, many aspects of rural change and urbanization can be more fully grasped if economics joins forces with other disciplines. The need in many instances to follow an interdisciplinary route is especially important when it comes to defining policies that must temper the search for economic efficiency with other social or political concerns.

The perception that working several disciplinary angles can be rewarding has definitely deepened among researchers in the Bank. More research proposals are couched in the language of political economy, and the Research Committee has encouraged this tendency so long as it meets

acceptable standards of rigor. If the findings from such research are commensurate with the high expectations, it will invigorate research in a number of fields that have been heavily investigated but only with the tools of economics.

These four major themes reflecting the operational concerns of the Bank provide the framework for future research. They straddle a range of subthemes that are distributed across the various program objective categories. Individual items of research are grouped according to program objective category.

### Allocation of research responsibilities

The main responsibility for implementing the Bank's research strategy will fall on two departments in the Development Economics Vice Presidency: the Policy Research Department and the International Economics Department. This is a consequence of the reorganization, which sought to lessen the dispersion of research in the Bank. Under the system that has emerged, operational departments will maintain their relatively low-key research involvement, the three thematic vice presidencies will actively support operations through best-practice dissemination, guidelines, and training, and DECVP will shoulder an increasing proportion of the research within the Bank.

#### *Policy Research Department*

PRD's research mandate has expanded to encompass sectoral research in addition to macroeconomic and country research. Three of its six divisions are responsible for sectoral research (Poverty and Human Resources, Finance and Private Sector Development, and Infrastructure, Agriculture, and Environment) and three are responsible for macro-oriented research (Transition Economics, Macroeconomics and Growth, and Public Economics). PRD's future work program reflects significant shifts in research priorities, resulting both from the natural evolution of its activities and from the new mandate of the reorganized department.

About 25 percent of the department's research resources for fiscal 1994 will be devoted to short-term studies, permitting a faster and more flexible response to rapidly changing demands for research-based analytic work. About 30 percent of fiscal 1994 departmental research resources will be devoted to a limited number of major cross-divisional products, with increasing attention to

macrosectoral linkages and varied country approaches and experience. The department will continue to conduct exploratory research on issues that are likely to demand policy attention in the near future.

#### *International Economics Department*

The International Economics Department's mandate is complementary to PRD's focus on primarily domestic issues. In addition to undertaking research on economic trends and international policy issues, IEC will continue to provide a wide array of data and reports on debt, trade, national accounts, and international financial and commodity markets. The production of its regular data reports and the collection and analysis of new data each will account for about 25 percent of IEC resources, with policy research and information services absorbing about 35 percent and 15 percent respectively.

IEC has vastly expanded the number of countries on which it reports as the Bank's membership has increased, a task that also has entailed development of methods to adapt reporting from the systems used in countries of Eastern Europe and the former Soviet Union. These methods will be refined and revised to improve accuracy and comparability as further information and analysis becomes available.

To offset the deterioration in quality of primary data from national sources and aggregates provided by international organizations, IEC will initiate a more systematic reporting of data quality notes, expand its data library to substitute for external sources in selected areas, work with national statistical personnel to improve reporting, and increase support of operational staff for country statistical work. And to accommodate an improvement in and expansion of dissemination products, in fiscal 1994 IEC research on commodity markets, global forecasting, the short-term economic outlook, and the informal sector will be reduced.

#### **New research**

##### *Transition of the formerly centrally planned economies*

Research will continue on the macroeconomic adjustment and growth of economies in transition and the microeconomic and institutional issues specific to these countries. The record of policy reforms and experiences of countries in transition is steadily accumulating, and several comparative

studies are planned for fiscal 1994–95. These will cover such key areas as the approach to and experience with enterprise reform, financial sector reforms, the macroeconomic implications of stabilization and new currencies, and unemployment and social welfare in the transition. Drawing on these studies, a comparative evaluation of selected aspects of reform is planned—for incorporation into a book or possibly a future *World Development Report*. A major comparative study is ongoing on enterprise behavior and economic reforms in Central and Eastern Europe, with the first phase due for completion in fiscal 1995 and a second phase—to include surveys of the Czech and Slovak Republics—planned. Another research project will analyze the main directions of agricultural and food policy reforms in some transitional economies in Europe and Russia and synthesize the findings for a comparative view of the effectiveness of various instruments for improving efficiency and inducing agricultural recovery.

Several case-based studies will explore the changing profile of enterprise governance. Enterprises emerging during the transition period are neither fully socialist nor fully market-oriented; rather, they are survival-oriented. Research exploring the adjustment behavior of enterprises in the Russian Federation will be completed in fiscal 1995. A comprehensive study on the current structure of industry in Russia has been initiated. So far the study has found little evidence of aggregate or industry concentration at the national level, which suggests that more than one or two enterprises in each industry must be producing many of the needed inputs. The vertical dependency of enterprises is a perception of their directors—and not based on actual market structure.

The impact of reform on households holds important implications for poverty and welfare. A research project expected to be completed in fiscal 1996 is evaluating the impact of stabilization and trade policies and institutional change on the economies in transition, focusing especially on the impact on living standards and household welfare. Research on unemployment and job transitions is using a rich microeconomic database to study labor reallocation in a reforming socialist economy in Eastern Europe that faces rapidly rising unemployment.

Major research on interactions between supply factors and the use and provision of social services will be completed in fiscal 1995. Empirical studies of welfare changes during and after transition will look at the new policies designed

to deal with the problems of transition. Analysis of income distribution at the end of communist rule in five Eastern European countries has produced some preliminary findings: income distribution in socialist countries was fairly egalitarian, urban workers were most affected by the economic decline, and social transfers had no redistributive function since they were almost uniform across income groups.

The Bank has been actively involved in the process of transition in the agricultural sector for several transforming socialist economies. A comparative study synthesizing the Bank's experiences has been proposed, and a workshop held in September 1993 marked the inception of the study. Research will focus on the immediate economic objectives of the transition in socialist agriculture, namely resumption of growth, efficient foreign agricultural trade, and sustainable improvements in rural income.

#### *Economic management*

The complexity of the interactions between the determinants of economic success has limited the ability of economists to accurately project basic macroeconomic variables beyond the short term. But economic policy must be based on some estimates of future conditions—for example, wages, tax revenues, international interest rates, exchange rates of major trading partners, and prices of investments and goods. The International Economics Department has used the Global Economic Model (GEM) to forecast trends in these variables in preparing its periodic Short-Term Outlook and Global Economic Prospects papers. This model generates macroeconomic projections for all the Bank's member countries. By integrating the countries of Eastern Europe and the former Soviet Union in the model, the IEC will substantially increase the reliability of its results although this will delay the completion of the model. A broad assessment of the Bank's analytic models was undertaken to see how fully these countries should be incorporated in the model and in what sequence. Also, the Bank's larger models and databases are being revised to make them comparable across countries and accessible through standard personal computers and easily transferable software. The goal is to provide country analysts inside and outside the Bank direct access to data for most of the 140 countries in the analytical database.

Building on the work done in the recent past on the factors influencing growth, the intention is to

examine the significance of neighborhood effects on performance and to understand the mechanisms through which success or failure spread across borders. The knowledge gained from research on the causes of growth will be synthesized in a book that should help make the findings accessible to a broad audience.

Linked to the investigation of the growth process are planned studies aimed at deepening our knowledge of how the response to external shocks affects long-term growth (for example, by comparing the performance of Latin America and Africa with that of East Asia) and the reasons underlying the slow recovery of growth following a major stabilization exercise.

The recently completed *East Asian Miracle* study will serve as a point of departure for research on the determinants of high savings rates, which have been cited as critical for growth and macroeconomic stability. The experience of East Asian and other countries will be used to analyze the manner in which growth affects the incidence of poverty and trends in various social indicators. Furthermore, research is planned to examine ways of enhancing the transferability of policy lessons gained from the miracle study to other countries.

The focus of public economics work has shifted from tax research to public expenditures and fiscal decentralization. New research initiatives on fiscal decentralization will include development of a methodology to measure the fiscal equalization among subnational governments; analysis of the design and assignment of revenue instruments, expenditure responsibilities, and intergovernmental transfers; and an empirical study of the link between decentralization and fiscal performance.

Future research on China will try to establish, qualitatively as well as quantitatively, whether administrative and fiscal decentralization has promoted rapid growth and to indicate how fiscal decentralization has to evolve in the future if China is to maintain macroeconomic stability under conditions of rapid growth. The lessons distilled from the Chinese experience should have a bearing on policy formulation in other countries that are tackling issues arising from decentralization.

A major report on fiscal decentralization and major research on public expenditure allocation are scheduled for completion in fiscal 1995. The Public Economics Division, Policy Research Department (PRDPE), will set up a Public Expenditure Analysis and Data Unit in 1994 to collaborate with and provide technical support to govern-

ments in collecting data for public expenditure analysis.

Research examining the link between the composition of public expenditure and economic growth is expected to be completed in fiscal 1995. Building on preliminary results, this study seeks to identify the factors that make certain types of public expenditure productive and others non-productive. The goal is to develop indicators for guiding decisionmaking about which components of public expenditure to expand and which to cut in a program of fiscal adjustment. Ongoing research by PRDPE is expected to yield methodological advances in the next few years for assessing the performance of public spending programs and to offer new insights on the effectiveness of public expenditure policies in poverty alleviation.

More countries seem willing to consider user charges to finance public services, both to reduce deficits and to avoid undesirable effects, such as pollution and congestion. A research project will price externalities from road use, such as congestion, accidents, and noise pollution.

The African economic indicators will be updated for a second time to present time-series data for 1982–92 and annual averages for three different periods. The expanded series will help place the past decade in historical perspective and broaden access to information on Africa. Research has also been launched on indigenous institutions and management practices to illuminate the dynamics of indigenous institutional change and provide lessons for Africa's management in the 1990s.

#### *Private sector development and public sector management*

New research will be initiated in fiscal 1995 on challenges for the regulation of industrial and infrastructure enterprises after privatization. In particular, an investigation of the cost of business regulation is intended to identify which regulatory constraints are binding in a particular setting and to measure their costs to private firms and the economy. One expected output will be guidelines for operational staff to diagnose the most burdensome formal rules and to measure their economic costs.

There is increasing concern that distribution systems in industrializing countries do not operate in a competitive manner and impede access to larger domestic and foreign markets. Research will examine the importance of imperfect competition in distribution systems and the fundamen-

tal causes of market failure in various channels and suggest policy recommendations.

Research on private enterprise development in Africa will focus primarily on an empirical investigation based on enterprise surveys and on in-depth analyses of the effect of government policies and supply-side constraints on the performance of African firms.

#### *Financial intermediation*

The Finance and Private Sector Development Division, Policy Research Department (PRDFP), will continue its research on the effect of the development of banking on economic growth and study the links between stock market development, corporate financing decisions, and economic development. This research will also assemble data on nonmonetary financial institutions, such as insurance companies, investment companies, pension funds, and development banks. New research is also planned on supervision and regulation of the financial system. Research on term finance will examine the problem of long-term finance and design policies to increase access to long-term capital.

An IFC pilot study on relationships between the stock exchange and development in the Republic of Korea will eventually be extended to other countries. Research will also be conducted on how firms in developing countries finance investment. Two ongoing research projects on the market structure and outcome for the Mexican stock exchange and on enterprise transformation in Poland will be continued in fiscal 1994 and fiscal 1995.

Another research project is studying the role of payments systems in financial sector reform in developing and formerly socialist countries. This research is expected to provide policy lessons and a basic set of principles on improving payments systems, which will be synthesized in a book. A conference planned for fiscal 1994 will launch studies on key payments system issues and the role of the private sector and the central bank.

#### *Poverty, distribution, and social welfare*

New sectoral research will focus heavily on the determinants of poverty and the environmental consequences of economic reform. Based on that research, the Poverty and Human Resources Division, Policy Research Department (PRDPH), plans to produce a Policy Research Report on the social and environmental consequences of economic reform. PRDPH will also design prospective studies to evaluate the impact of such Bank social

sector investments as social safety net programs, decentralization of public school funding, and health and nutrition programs.

Explicating the links between policy and poverty reduction will be another research focus. An ongoing project is studying the impact of price liberalization in rural areas of China; another is exploring the impact of macroeconomic and sectoral policies on consumption in India during 1951–90. Research on the causes and consequences of the productivity improvement of women will examine the sustainability of three major credit programs in Bangladesh and the effect of these programs on households.

A project to study poverty in rural China will construct a panel data set from rural household survey data for four provinces collected by China's State Statistical Bureau over a six-year period. These data will then be analyzed to improve understanding of the dynamics of poverty in rural China, especially the factors contributing to poverty and its alleviation over time. The performance of existing public and private poverty relief arrangements, including self-insurance and risk-sharing practices, will be evaluated. This research will not only allow the first systematic investigation using household-level data of transitions in and out of poverty in rural China, but will have important implications for the design of future antipoverty policies as well.

#### *Human resources development and employment*

Work on labor markets begun in fiscal 1993 will expand, with emphasis on the effects of labor market interventions and institutions on international competitiveness and the speed of adjustment. A major research project is planned for fiscal 1995 on the impact of labor market policies and institutions on economic performance.

Research on the impact of organized labor and policy interventions in the labor market on the short-term adjustment to economic reforms and long-run economic performance is expected to provide guidance in two policy areas. It will help to assess the appropriateness of the Bank's focus on product market reforms in the 1980s and the extent to which labor markets in developing countries were able to circumvent government interventions during the past two decades.

A cross-national study on enterprise training strategies and productivity will attempt to identify the structural factors and market failures that impede training in developing countries, and provide guidance for designing policies to promote

enterprise training appropriate to national circumstances. Industrial countries have already recognized the importance of enterprise training to productivity and international competitiveness, and research in this area is making headway.

As a follow-up to earlier research on the determinants of health and nutritional outcomes in Indonesia, the East Asia and Pacific region is conducting the Indonesian Resource Mobilization Study (IRMS) to measure the impact of higher user fees on the utilization of primary health services (see box 2). The IRMS will use longitudinal panel data from surveys of the same households before and after intervention periods to measure the impact of experimental changes in price and quality on medical care utilization and health outcomes. Important goals of World Bank programs, such as the improvement of health status and the alleviation of poverty, are addressed by this study.

Ongoing research on private sector involvement in providing health and education services finds that government health programs in developing countries are neither equitable nor efficient and reflect the current political equilibrium, which cannot easily be changed. The study, to be completed in fiscal 1996, has also found great variations across countries in the proportion of secondary student enrollment in private schools and attributed the variation primarily to cultural heterogeneity, especially religious heterogeneity. Limited public spending on secondary education also leads to proportionately higher enrollment in private schools.

Much as *World Development Report 1994* will situate the role of infrastructure in the overall development process and help advance the debate on policy, *World Development Report 1995* will draw together the many strands of research on labor markets and human resources to analyze the patterns of employment, examine possible strategies, and identify some of the most critical issues that will engage researchers in the future.

#### *Environment and natural resources*

Research on environmental and social aspects of adjustment will assess the effects of alternative patterns of economic growth and of macroeconomic, trade, and fiscal adjustment policies on social progress and on the environment. Specific sectoral policies to deal with adverse environmental and poverty outcomes will also be studied.

The Global Environment Facility (GEF) of the Environment Department is responsible for sev-

eral research projects to be completed in fiscal 1994. These include designing strategies for conservation, lessons from GEF experience to date, the strategic significance of the Bank GEF biodiversity portfolio and global warming portfolio, and an operational definition of incremental costs under the Montreal Protocol.

Previous research on agricultural productivity clearly underlined the importance of securing a better understanding of agricultural technology policies. A new study will focus on investments in national agricultural research systems, efficiency of resource use, and institutional mechanisms for research to assess organizations that service the knowledge industries on which agriculture depends.

The Bank is intensifying its dialogue on land issues in the Latin America and the Caribbean region and will consider further reforms of rural land markets. This requires a clear understanding of the potential benefits and limitations of operations that aim to provide greater security of tenure. One project will examine land tenure insecurity and other institutional restrictions affecting small farm productivity in Honduras and Paraguay. The empirical estimates of this research will permit evaluation of the efficiency and desirability of investing in land titling projects.

Another agricultural project will investigate the economic justification for government restrictions on the use of land on the fringes of urban areas. The project will concentrate on Bangladesh and Indonesia, two countries with high population densities that are experiencing significant land conversion from rural to urban uses. The project will build on existing models of the two countries to make predictions about total urban land use under different scenarios of infrastructure provision and land use and development policies.

A major multidepartment study will explore the production prospects during the next decade for cotton, a product with a vital multisectoral role in the economies of many developing countries. Case studies carried out in nine countries will form the foundation for examining a series of technological, economic, policy, and institutional issues. A synthesis report will be discussed at a workshop in Cairo in October 1994.

An important externally funded research project managed by the Cofinancing Financial Advisory Services Department will study the private financing of power sector investments in a range of countries with different regulatory environments and varying degrees of country risk and access to

international capital markets. It will also examine utilities' access to private financing and other approaches for meeting capacity requirements through the involvement of the private sector.

#### *Adjustment, trade, capital flows, and debt*

The surge of portfolio flows to several middle-income countries in recent years shifts the focus of study of international capital markets from the management of the commercial bank debt crisis to the study of other private capital flows to countries regaining access to market. How this surge in portfolio flows is different from and how it is similar to the experience leading to the debt crisis are the two key questions that IEC is beginning to explore. Potentially important differences relate to nonbank investors, mostly private, and the increasing importance of equity investment. Whether these differences are highly relevant in the macroeconomic aggregate and, if so, what are the optimal external finance mix and the policy to achieve it, are questions with important policy ramifications. Past experiences can shed light on the current issues. The surge of new flows also has similarities with the period leading to the debt crisis: the flows are stimulated by low international interest rates, are susceptible to changes in foreign exchange rates, and suggest substantial country risk in the case of several debtors. These factors need to be explored to avoid repeating the crisis of the 1980s.

Substantive work on foreign direct investment (FDI) in the past two decades failed to yield substantial empirical evidence on its benefits. To fill this gap, a study will analyze the relationships of FDI with technology spillovers and pollution intensity and examine the general determinants of FDI in manufacturing, with a focus on developing countries.

The 1994 Global Economic Prospects (GEP) report will focus on the economic links in primary commodity markets between developing countries and the international economy. The research will cover the world food outlook, prospects for agricultural exports from Sub-Saharan Africa, commodity risk management, liberalization of agricultural trade, and trends in commodity terms of trade, including macroeconomic linkages. Trade in services will receive special emphasis in the 1995 GEP report.

Building on the results of a pilot study of German and Swiss machinery exports to Brazil, a research project beginning in fiscal 1994 will look at the effects of price and of the creditworthiness

and trade policies of developing countries on the economic efficiency of their purchase of imported equipment and their domestic machinery industries. The study will include a larger sample of exporting industrial countries and importing developing countries.

Factors contributing to the resurgence of protection following initiation of trade liberalization are being examined in research on trade liberalization programs in ten developing countries. The study is expected to culminate in the development of safeguards to liberalization strategies for developing countries.

A series of studies is examining problems of the GATT system that hold particular significance for developing countries. One study found that while the GATT as an institution has been important, the GATT's influence on regional arrangements has been marginal because GATT rules have not been rigorously applied. Other studies are reviewing actions such as antidumping measures that restrict imports. Preliminary findings show that the recent broadening of GATT rules to include these measures neither strengthens the GATT's disciplinary power nor increases the effectiveness of its dispute settlement mechanism.

In the changeable and interdependent environment of the early 1990s, it is expected that the flexibility and responsiveness required in the research program's recent years will continue. New directions and changes in emphasis are expected in some areas, while progress, although sometimes painfully slow, will be made in others that we see as the heart of the research endeavor.

But some of the efforts and changes being made now will yield benefits and shape the Bank's work and vision for a long time to come. The continued improvement in the information and data on which empirical research and thus policy insights are based will be maintained. Descriptive analysis as well as strategic guidance will come from continuing work on the transitional economies. The integration of environmental aspects into the Bank's economic and social assessments will be expanded and refined and will improve the basis on which decisions are made daily. In financial and trade arenas, where cooperative international systems yield benefits greater than the sum of their parts, a decade of concerted research has enabled analysts to provide policymakers with rapid and comprehensive advice on the likely effects of various strategies.

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## Notes

1. PRDPH; Data analysis for development policy.
2. PRDPH; World poverty monitoring.
3. PHRPA; Policy analysis of poverty: Applicable methods and case studies, phase II.
4. CECTP; Adjustment, income distribution, and poverty.
5. PHRPA; The economics of nonmarket transfers in developing countries.
6. ESP and SA1PH; Credit programs for the poor: Household and intrahousehold impacts and program sustainability.
7. PHRPA; Macroeconomic adjustment and poverty relief: The roles of social policy and household behavior.
8. PRDFP, PRDPE, PRDTP, PRDTM, and PRDFD; Income security for old age: Conceptual background and major issues.
9. PRDPE; Public expenditures and poverty.
10. LATDR and HROVP; Indigenous people and poverty in Latin America: An empirical analysis.
11. PRDPH and ESP; Economics of education.
12. PRD and EAPVP; Public goods, private goods, and social sector outcomes.
13. LAT, LA1HR, EA2HR, EA3HR, and EDI; Improving the quality of primary education in Latin America.
14. EA3PH; The determinants and consequences of the placement of government programs in Indonesia.
15. EAPVP and PRDPH; Determinants of nutritional and health outcomes in Indonesia and implications for health policy reforms.
16. PHRWD; Letting girls learn: Promising approaches in primary and secondary education.
17. PRDPH, PHN, AF4PH, AF4GA, and AF4NG; Economic and policy determinants of fertility in Sub-Saharan Africa.
18. PHN; Impediments to contraceptive use in different environments.
19. ESP, PRDPH, EC2HR, and MNAVP; Managing the social cost of adjustment.
20. TWUDR; The marginal productivity of infrastructure in developing countries.
21. TWUWS; Willingness to pay for rural water supply.
22. INUWS; Private sector participation in water supply and sanitation.
23. INUWS; Synergistic health effects from water supply and sanitation interventions.
24. AGRTN and AGRDR; Irrigation research: Preparation of an international program for technology research in irrigation and drainage.
25. TWURD; Analysis of the results from the extensive survey of housing indicators in fifty-two countries.
26. CECFP; Bank restructuring: The international experience.
27. CECFP, LA4DR, and IENIN; The impact of financial reform.
28. IECDI; Closed-end country funds: Theoretical and empirical investigation.
29. IECDI; Japanese foreign direct investment in developing countries: Trends, determinants, and policies.
30. EMTAG; Agricultural credit in the EMENA

region: Characteristics, issues, and strategy.

31. IENIN and AF4IE; Meeting the financial needs of Ghana's small and medium-scale enterprises.

32. IECSE; Measuring the incomes of economies of the former Soviet Union.

33. EA2DR and DECVP; Reestimation of China's national accounts and growth rates.

34. PRDTM, PRDTP, EMTDR, EA1CO, EC3DR, and FODD2; Privatization in Eastern Europe.

35. CECSE, FODD2, EA1CO, ECA, and MNA; Elements of social transformation (privatization).

36. CFSPS and LEGEC; Privatization in the republics of the former Soviet Union: Framework and initial results.

37. IEN; Private sector manufacturing in Eastern Europe.

38. PRDPE; Intergovernmental relations in Russia.

39. CECTP and EC3DR; Transitional trade and payments arrangements in the former Soviet Union; CECTP; How moving to world prices affects the terms of trade in fifteen countries of the former Soviet Union.

40. PRDTM; Labor market dynamics during the transition of a socialist economy.

41. AGRAP, CECSE, and EMTPM; Agricultural reform in Eastern Europe and the former Soviet Union: Dilemmas and strategies.

42. AGRAP; How retail food markets responded to price liberalization in Russia.

43. ECAVP and EC4NR; Agricultural marketing in the former Soviet Union.

44. FSD; Banking in transitional socialist economies.

45. PRDTM; Financial aspects of the transition (conference).

46. EC2PL; Enterprise behavior and competitiveness.

47. EC2PL; State enterprise behavior in Poland during the Economic Transformation Program.

48. CECPS; Welfare consequences of selling public enterprises: Case studies from Chile, Malaysia, Mexico, and the United Kingdom.

49. MN1IE and MN2IE; Public enterprise management and state holding companies.

50. IENIN; High technology: Implications for developing countries.

51. IFC; Intellectual property rights protection and technology transfer through foreign direct investment.

52. PRDFP, PRDTP, and PSD; The role of government in the development of support systems for small and medium-size enterprises.

53. CECDR, CECPS, EA1DR, EA1CO, EA3CO, EAPVP, EDIFI, and IECIT; Strategies for rapid growth: Public policy and the Asian miracle.

54. LATTF; Macroeconomic policies, crisis, and growth in the long run.

55. CECTM; How do national policies affect long-run growth?

56. CECTM; Patterns of growth: Further work on national policies and long-run growth; and IECDR, IECAP, and IECSE; Total factor productivity growth in industrial and developing countries.

57. PRDPE; Intergovernmental fiscal relations in developing countries.

58. CECPE; Fiscal incentives reform.

59. IENIN; Foreign direct investment and trade.

60. PRDPE; Corporate income tax incentives for investment in developing countries.

61. PRDTM and EC3C3; The macroeconomic implications of parallel foreign exchange markets in developing countries.

62. PRDTM; Target zones and real exchange rates in developing countries.

63. PRDTM; Foreign exchange auction markets and exchange rate unification in Sub-Saharan Africa.

64. PSD, PRDEI, and EA3EN; Industrial pollution: Global indices.

65. ENVPR; Improved accounting of natural resources and the environment for more sustainable resource management.

66. IECIT; International trade and the environment.

67. PRDTP, ENVLW, and ASTTP; Economic growth and trade policy in Western Africa: Implications of the degradation of the vegetation cover, phase II.

68. PRDEI, PRDDR, and PSD; Industrial pollution in developing countries.

69. PRDEI; Enterprise ownership and pollution.

70. PRDEI; Econometric analysis of pollution abatement costs.

71. ENVPE; Public policy instruments.

72. PSD; Environmentally friendly technology.

73. PRDPE and EMTEN; World energy subsidies and implications for greenhouse gas emissions and government revenues.

74. PRDPE; Energy pricing study.

75. IENEP; The urban energy transition in developing countries.

76. ENVPR; Integrated land management.

77. AGR, ENV, EDI, EC1TU, AF4NG, and SA2NA; Farming systems and natural resource management: A comparison of successful experi-

ences in developing countries.

78. ENVPE and AGRTN; Dryland management.

79. AGRAP and AGRTN; Privatization of agricultural support services.

80. AGRAP; Drought insurance.

81. IECIT; The world food outlook

82. AGRTN, AGRDR, and AGRAP; Technology assessment of agricultural development.

83. CECTP and ENVPR; Pesticide externalities, comparative advantage, and commodity trade: Cotton in Andhra Pradesh, India.

84. AGRAP, AGRDR, AGRTN, LATAD, LA2AG, LA2DR, ASTDR, ENV, IECIT, CGIAR, and OEDD2; Advancing agricultural productivity: Technical and behavioral constraints.

85. CECMG and LA3C2; The political economy of structural adjustment.

86. PRDTM; Adjustment in Africa: Reforms, re-

sults, and the road ahead.

87. "Stripped" is a technical term in finance. In this context stripped prices are adjusted prices. The adjustment amounts to netting out the contribution of the enhancements attached.

88. IECIT; License prices and rent sharing in the Multi-Fibre Arrangement.

89. PRDTP, PRDPE, and MNAVVP; Volume on industrial competition, productivity, and trade regimes.

90. CECTP and LATTF; New dimensions in regional integration.

91. EC2DR, MN2CO, CECFP, and IECIT; Assessing the Mexico-United States free trade agreement.

92. IECIT; Manufactures trade modeling.

93. IECIT; Commodity price formation and behavior.





*Appendix tables*



**Appendix table 1 Bank research in relation to other Bank analytical work and the administrative budget, fiscal 1990 to fiscal 1993**

<i>Item</i>	<i>Fiscal 1990</i>		<i>Fiscal 1991</i>		<i>Fiscal 1992</i>		<i>Fiscal 1993</i>	
	<i>Millions of dollars</i>	<i>Percentage of total</i>						
Research	23.4	17.4	22.5	15.5	25.1	14.9	26.5	13.7
Economic and sector work	73.2	54.2	82.4	56.7	101.9	60.7	127.0	65.7
Policy work	38.3	28.4	40.4	27.8	41.0	24.4	39.8	20.6
Total analytical work	134.9	100.0	145.3	100.0	168.1	100.0	193.3	100.0
<i>Memo items:</i>								
Research as a percentage of Bank administrative expenses		4.2		3.7		3.8		3.4 a/
Research expenditure in constant fiscal 1993 dollars	27.7		25.0		26.0		26.5	

a. "Bank administrative expense" is defined in fiscal 1993 as the total unit-managed program, including reimbursable programs, which were excluded in previous years.

Source: Planning and Budgeting Department.

Appendix table 2A Resources devoted to research, by department, fiscal 1992

Department	Centrally approved projects				Departmental studies		Total research costs			
	Research Support Budget expenditure (\$,000)	Staff cost		Total cost (\$,000)	Staff cost		Total staff cost		RSB and total staff cost	
		Time (years)	Cost (\$,000)		Time (years)	Cost (\$,000)	Time (years)	Cost (\$,000)	Cost (\$,000)	Percent- age of total
Development Economics	3,077.3	25.8	3,629.7	6,707.0	46.0	6,471.6	71.8	10,101.3	13,178.6	52.5
International Economics	457.9	4.2	590.9	1,048.8	21.5	3,024.8	25.7	3,615.7	4,073.6	16.2
Country Economics	1,686.4	21.0	2,954.4	4,640.8	19.0	2,673.1	40.0	5,627.5	7,313.9	29.2
Research Advisory Staff	709.8	0.5	70.3	780.1	2.9	408.0	3.4	478.3	1,188.1	4.7
EDI	54.3	0.0	0.0	54.3	0.0	0.0	0.0	0.0	54.3	0.2
WDR	45.2	0.0	0.0	45.2	0.0	0.0	0.0	0.0	45.2	0.2
DECVP	123.7	0.1	14.1	137.8	2.6	365.8	2.7	379.9	503.6	2.0
Sector Policy and Research	1,527.5	13.0	1,828.9	3,356.4	47.8	6,724.8	60.8	8,553.8	10,081.3	40.2
Agriculture and Rural Development	131.4	1.9	267.3	398.7	8.6	1,209.9	10.5	1,477.2	1,608.6	6.4
Environment	19.9	0.0	0.0	19.9	5.3	745.6	5.3	745.6	765.5	3.1
Infrastructure and Urban Development	414.1	2.1	295.4	709.5	6.9	970.7	9.0	1,266.2	1,680.3	6.7
Industry and Energy	153.2	2.8	393.9	547.1	7.5	1,055.2	10.3	1,449.1	1,602.3	6.4
Population and Human Resources	808.9	6.2	872.3	1,681.2	19.5	2,743.4	25.7	3,615.7	4,424.6	17.6
Regional offices	1,049.9	0.3	57.8	1,107.7	3.3	636.0	3.6	693.8	1,743.7	7.0
Africa	188.3	0.0	0.0	188.3	0.3	57.8	0.3	57.8	246.1	1.0
Asia	165.8	0.0	0.0	165.8	0.2	38.5	0.2	38.5	204.3	0.8
Europe, Middle East, and North Africa	58.5	0.3	57.8	116.3	0.7	134.9	1.0	192.7	251.2	1.0
Latin America and the Caribbean	617.3	0.0	0.0	617.3	0.9	173.4	0.9	173.4	790.7	3.2
CFSPS	20.0	0.0	0.0	20.0	1.2	231.3	1.2	231.3	251.3	1.0
IFC	77.4	0.0	0.0	77.4	0.0	0.0	0.0	0.0	77.4	0.3
<b>Total</b>	<b>5,732.1</b>	<b>39.1</b>	<b>5,516.5</b>	<b>11,248.6</b>	<b>97.1</b>	<b>13,832.4</b>	<b>136.2</b>	<b>19,348.9</b>	<b>25,081.0</b>	<b>100.0</b>

Source: Environmentally Sustainable Development, Shared Information and Technical Unit, and Research Advisory Staff.

Appendix table 2B Resources devoted to research, by department, fiscal 1993

Department	Centrally approved projects				Departmental studies		Total research costs			
	Research Support Budget expenditure (\$,000)	Staff cost		Total cost (\$,000)	Staff cost		Total staff cost		RSB and total staff cost	
		Time (years)	Cost (\$,000)		Time (years)	Cost (\$,000)	Time (years)	Cost (\$,000)	Cost (\$,000)	Percent- age of total
Development Economics	3,378.6	36.7	5,828.8	9,207.4	48.2	7,655.3	84.9	13,484.1	16,862.7	63.6
International Economics	290.0	4.0	635.3	925.3	17.3	2,747.6	21.3	3,382.9	3,672.9	13.8
Policy Research	2,195.2	29.8	4,732.9	6,928.1	27.7	4,399.4	57.5	9,132.4	11,327.6	42.7
Research Advisory Staff	750.9	1.2	190.6	941.5	2.0	317.6	3.2	508.2	1,259.1	4.7
Economic Development Institute	118.3	1.6	254.1	372.4	0.0	0.0	1.6	254.1	372.4	1.4
Development Policy Group	24.2	0.1	15.9	40.1	0.0	0.0	0.1	15.9	40.1	0.2
DECVP	0.0	0.0	0.0	0.0	1.2	190.6	1.2	190.6	190.6	0.7
Sectoral Vice Presidencies	749.5	6.4	1,016.5	1,766.0	41.6	6,607.1	48.0	7,623.5	8,373.0	31.6
Agriculture and Natural Resources	126.3	1.3	206.5	332.8	4.8	762.4	6.1	968.8	1,095.1	4.1
Environment	0.0	0.0	0.0	0.0	6.9	1,095.9	6.9	1,095.9	1,095.9	4.1
Transportation, Water and Urban Development	227.1	1.4	222.4	449.5	5.2	825.9	6.6	1,048.2	1,275.3	4.8
Financial Sector Development	10.0	0.1	15.9	25.9	2.3	365.3	2.4	381.2	391.2	1.5
Industry and Energy	155.8	0.1	15.9	171.7	1.4	222.4	1.5	238.2	394.0	1.5
Private Sector Development	10.0	0.5	79.4	89.4	5.5	873.5	6.0	952.9	962.9	3.6
Education and Social Policy	6.5	3.0	476.5	483.0	11.4	1,810.6	14.4	2,287.1	2,293.6	8.6
Population, Health and Nutrition	213.8	0.0	0.0	213.8	4.1	651.2	4.1	651.2	865.0	3.3
Regional offices	1,021.3	0.1	15.9	1,037.2	0.6	95.3	0.7	111.2	1,132.5	4.3
Africa	231.0	0.0	0.0	231.0	0.0	0.0	0.0	0.0	231.0	0.9
East Asia and Pacific	17.2	0.0	0.0	17.2	0.0	0.0	0.0	0.0	17.2	0.1
South Asia	35.4	0.0	0.0	35.4	0.0	0.0	0.0	0.0	35.4	0.1
Europe and Central Asia	145.7	0.0	0.0	145.7	0.6	95.3	0.6	95.3	241.0	0.9
Middle East and North Africa	184.7	0.0	0.0	184.7	0.0	0.0	0.0	0.0	184.7	0.7
Latin America and Caribbean	407.3	0.1	15.9	423.2	0.0	0.0	0.1	15.9	423.2	1.6
Others	120.0	0.0	0.0	120.0	0.2	31.8	0.2	31.8	151.8	0.6
<b>Total</b>	<b>5,269.4</b>	<b>43.2</b>	<b>6,861.2</b>	<b>12,130.6</b>	<b>90.6</b>	<b>14,389.4</b>	<b>133.8</b>	<b>21,250.6</b>	<b>26,520.0</b>	<b>100.0</b>

Source: Environmentally Sustainable Development, Shared Information and Technical Unit, and Research Advisory Staff.

**Appendix table 3A Resources devoted to research, by program objective, fiscal 1992**

<i>Program objective category</i>	<i>Centrally approved projects</i>				<i>Staff cost of departmental studies</i>		<i>Total research costs</i>		<i>RSB and total staff cost</i>	
	<i>Research Support Budget expenditure (\$,000)</i>	<i>Staff cost</i>		<i>Total cost (\$,000)</i>	<i>Time (years)</i>	<i>Cost (\$,000)</i>	<i>Total staff cost</i>		<i>Cost (\$,000)</i>	<i>Percentage of total</i>
		<i>Time (years)</i>	<i>Cost (\$,000)</i>				<i>Time (years)</i>	<i>Cost (\$,000)</i>		
Adjustment, trade, and debt	1,657.6	14.0	1,972.4	3,630.0	15.8	2,245.6	29.8	4,218.0	5,875.6	23.4
Poverty reduction and human resource development	1,347.3	9.7	1,368.5	2,715.8	30.0	4,270.5	39.7	5,639.0	6,986.4	27.9
Private and public sector reform	575.8	8.5	1,199.2	1,775.0	13.5	1,920.9	22.0	3,120.2	3,695.9	14.7
Financial intermediation	179.3	0.7	104.4	283.7	3.2	452.8	3.9	557.2	736.5	2.9
Environment and forestry	513.5	2.7	378.1	891.6	8.9	1,265.9	11.6	1,644.0	2,157.5	8.6
Natural resources	24.6	0.3	45.1	69.7	4.3	615.2	4.6	660.3	684.9	2.7
Basic infrastructure and urban development	481.3	1.4	198.9	680.2	2.7	383.0	4.1	582.0	1,063.3	4.2
Economic management	952.0	1.7	237.0	1,189.0	15.2	2,170.1	16.9	2,407.2	3,359.1	13.4
Other	0.8	0.1	12.7	13.5	3.6	508.4	3.7	521.1	521.9	2.1
<b>Total</b>	<b>5,732.1</b>	<b>39.1</b>	<b>5,516.5</b>	<b>11,248.6</b>	<b>97.1</b>	<b>13,832.4</b>	<b>136.2</b>	<b>19,348.9</b>	<b>25,081.0</b>	<b>100.0</b>

Source: Environmentally Sustainable Development, Shared Information and Technical Unit, and Research Advisory Staff.

**Appendix table 3B Resources devoted to research, by program objective, fiscal 1993**

<i>Program objective category</i>	<i>Centrally approved projects</i>				<i>Staff cost of departmental studies</i>		<i>Total research costs</i>			
	<i>Research Support Budget expenditure (\$,000)</i>	<i>Staff cost</i>		<i>Total cost (\$,000)</i>	<i>Time (years)</i>	<i>Cost (\$,000)</i>	<i>Total staff cost</i>		<i>RSB and total staff cost</i>	
		<i>Time (years)</i>	<i>Cost (\$,000)</i>				<i>Time (years)</i>	<i>Cost (\$,000)</i>	<i>Cost (\$,000)</i>	<i>Percentage of total</i>
Adjustment, trade, and debt	816.8	10.7	1,705.4	2,522.2	19.8	3,151.9	30.6	4,857.3	5,674.1	21.4
Poverty reduction and human resource development	1,721.1	13.4	2,118.6	3,839.7	24.9	3,953.9	38.2	6,072.5	7,793.6	29.4
Private and public sector reform	811.3	12.0	1,900.9	2,712.1	16.9	2,688.3	28.9	4,589.1	5,400.4	20.4
Financial intermediation	229.1	0.2	33.4	262.5	2.7	433.5	2.9	466.9	695.9	2.6
Environment and forestry	511.1	2.0	322.6	833.7	10.3	1,629.2	12.3	1,951.8	2,462.9	9.3
Natural resources	25.9	0.7	117.6	143.5	2.6	409.7	3.3	527.3	553.2	2.1
Basic infrastructure and urban development	344.9	0.9	141.5	486.4	1.9	303.3	2.8	444.7	789.7	3.0
Economic management	797.6	3.3	521.3	1,318.9	11.2	1,772.1	14.4	2,293.4	3,091.0	11.7
Other	11.6	0.0	0.0	11.6	0.3	47.6	0.3	47.6	59.2	0.2
<b>Total</b>	<b>5,269.4</b>	<b>43.2</b>	<b>6,861.2</b>	<b>12,130.6</b>	<b>90.6</b>	<b>14,389.4</b>	<b>133.8</b>	<b>21,250.6</b>	<b>26,520.0</b>	<b>100.0</b>

Source: Environmentally Sustainable Development, Shared Information and Technical Unit, and Research Advisory Staff.

**Appendix table 4A External funding for research, by program objective, fiscal 1992**

<i>Program objective category</i>	<i>Cost (\$,000)</i>	<i>Percentage of total</i>
Adjustment, trade, and debt	165.8	6.1
Poverty reduction and human resource development	500.3	18.5
Private and public sector reform	430.4	15.9
Financial intermediation	32.0	1.2
Environment and forestry	866.7	32.0
Natural resources	52.4	1.9
Basic infrastructure and urban development	411.5	15.2
Economic management	1.5	0.1
Other	247.2	9.1
Total	2,707.7	100.0

Source: Environmentally Sustainable Development, Shared Information and Technical Unit, and Research Advisory Staff.

**Appendix table 4B External funding for research, by program objective, fiscal 1993**

<i>Program objective category</i>	<i>Cost (\$,000)</i>	<i>Percentage of total</i>
Poverty reduction and human resource development	810.0	14.7
Women in development	206.5	3.7
Private sector development	1,222.9	22.2
Environmentally sustainable development	2,398.2	43.5
Economic management	873.5	15.9
Total	5,511.2	100.0

Source: Environmentally Sustainable Development, Shared Information and Technical Unit, and Research Advisory Staff.

**Appendix table 5A External funding for research, by management unit, fiscal 1992**

<i>Department/region</i>	<i>Cost (\$,000)</i>	<i>Percentage of total</i>
Development Economics		
International Economics	14.1	0.5
Country Economics	337.6	12.5
Sector Policy and Research		
Agriculture and Rural Development	154.8	5.7
Environment	801.9	29.6
Infrastructure and Urban Development	759.7	28.1
Industry and Energy	56.3	2.1
Population and Human Resources	267.3	9.9
Latin America and the Caribbean Regional Office	75.2	2.8
CFSPS	240.9	8.9
<b>Total</b>	<b>2,707.7</b>	<b>100.0</b>

Source: Environmentally Sustainable Development, Shared Information and Technical Unit, and Research Advisory Staff.

**Appendix table 5B External funding for research, by management unit, fiscal 1993**

<i>Department/region</i>	<i>Cost (\$,000)</i>	<i>Percentage of total</i>
Development Economics		
International Economics	238.2	4.3
Country Economics	1,556.5	28.2
Subtotal	1,794.7	32.6
Sectoral vice presidencies		
Agriculture and Rural Development	349.4	6.3
Environment	1,620.0	29.4
Transportation, Water, and Urban Development	1,000.6	18.2
Financial Sector Development	238.2	4.3
Industry and Energy	95.3	1.7
Private Sector Development	47.6	0.9
Education and Social Policy	190.6	3.5
Population, Health, and Nutrition	142.9	2.6
Subtotal	3,684.7	66.9
Others	31.8	0.6
<b>Total</b>	<b>5,511.2</b>	<b>100.0</b>

Source: Environmentally Sustainable Development, Shared Information and Technical Unit, and Research Advisory Staff.

**Appendix table 6A Research Support Budget-funded research starts, by size of project, fiscal 1988-93**

Size of project	Fiscal 1988		Fiscal 1989		Fiscal 1990		Fiscal 1991		Fiscal 1992		Fiscal 1993	
	Number of projects	Cost (\$,000)										
\$0-\$20,000	17	172.7	38	513.8	47	572.4	33	432.3	34	509.0	32	478.8
\$20,001-\$100,000	11	523.7	15	1,093.2	20	1,331.3	17	1,092.4	27	1,285.7	58	2,183.7
\$100,001-\$300,000	7	1,379.5	10	1,926.8	8	1,329.2	11	1,864.7	12	2,051.3	4	730.0
\$300,001-\$999,999	1	551.9	1	415.4	4	1,918.6	3	1,200.0	1	409.3	2	1,055.5
Total	36	2,627.8	64	3,949.2	79	5,151.5	64	4,589.3	74	4,255.3	96	4,448.0

Source: Research Advisory Staff.

**Appendix table 6B Research Support Budget-funded research starts (excluding research preparation), by size of project, fiscal 1988-93**

Size of project	Fiscal 1988		Fiscal 1989		Fiscal 1990		Fiscal 1991		Fiscal 1992		Fiscal 1993	
	Number of projects	Cost (\$,000)										
\$0-\$100,000	34	509.0	33	1,417.1	38	1,643.5	29	1,286.5	47	1,611.9	79	2,515.6
\$100,001-\$300,000	27	1,285.7	10	1,926.8	8	1,329.2	11	1,864.7	12	2,051.3	4	730.0
\$300,001-\$999,999	12	2,051.3	1	415.4	4	1,918.6	3	1,200.0	1	409.3	2	1,055.5
Total	73	409.3	44	3,759.3	50	4,891.3	43	4,351.1	60	4,072.5	85	4,301.1

Source: Research Advisory Staff.

Appendix table 7A Research Support Budget-funded research, by program objectives, fiscal 1992

<i>Program objective/title</i>	<i>Project number</i>	<i>Key a/</i>	<i>Dept.</i>	<i>Total authori- zation</i>	<i>Fiscal 1992 expenses b/</i>	<i>Remaining authori- zation</i>	
<i>Adjustment, trade, and debt</i>							
Macroeconomic aspects of foreign exchange markets in developing countries	67530	R	O	CEC	265.0	79.6	0.0
Macroeconomics of public sector deficits	67531	R	C	CEC	315.5	39.5	0.0
Industrial reforms and productivity in Chinese enterprise	67538	R	O	CEC	409.6	137.6	63.1
Reform dilemmas and strategies in agriculture in socialist countries	67548	R	C	AGR	60.0	0.0	0.0
Regulations against unfair imports: Effects on developing countries	67552	R	C	CEC	159.0	0.0	0.0
The impact of EC 1992 and trade integration in selected Mediterranean countries	67564	R	C	CEC	89.2	28.9	0.0
Dissemination funds for the trade liberalization project (RPO 67331)	67599	D	C	LA1	90.0	23.8	0.0
Implications of agricultural policy reform for developing countries	67611	R	C	AGR	230.8	83.3	0.0
The political economy of structural adjustment	67637	R	O	CEC	248.9	146.2	7.5
Managing labor markets in transitional socialist economies	67640	P	C	CEC	18.8	0.0	0.0
Dissemination—a comparative study of the political economy of agricultural pricing policies	67646	D	C	CEC	18.5	5.0	0.0
Cost of protection index	67649	R	O	IEC	98.1	42.7	30.2
Visiting research fellow—Tatsuo Hatta	67651	V	C	CEC	29.8	15.9	0.0
Visiting research fellow—Jeremy Bulow	67653	V	C	IEC	28.5	0.0	0.0
Visiting research fellow—Leonardo Leiderman	67654	V	C	CEC	29.1	25.0	0.0
Visiting research fellow—Csaba Csaki	67655	V	C	AGR	38.4	38.1	0.0
Equipment prices and trade policy for developing country manufacturing industries	67661	R	O	CEC	56.0	25.4	30.6
Import license auctions in trade liberalization: An empirical study	67662	P	C	CEC	14.7	14.7	0.0
Assessing the Mexico-United States free trade agreement	67665	R	O	LA2	249.1	189.0	60.0
License prices and rent-sharing in the multi-fibre arrangement	67669	R	O	IEC	86.5	69.6	10.5
Commodity exports and real income in Africa	67670	R	O	CEC	131.6	64.1	67.5
Measurement of commodity price volatility	67673	R	C	IEC	43.9	43.9	0.0
Design of tariff reform: Theory, evidence, and implications	67677	R	O	CEC	19.0	19.3	0.0
Industrial restructuring and reform in three Chinese cities and center-local fiscal and financial relations in China	67686	P	C	AS3	10.0	10.2	0.0
Enterprise behavior and economic reforms: A comparative study in Central and Eastern Europe	67699	R	O	CEC	409.3	91.6	317.8
The collapse of Soviet growth and the prospect of recovery	67701	P	C	CEC	11.7	11.4	0.0
Growth and productivity in developing countries	67709	R	C	INV	20.0	20.0	0.0
Volume on industrial competition, productivity, and trade regimes	67710	D	O	CEC	57.0	35.0	22.0
New dimensions in regional integration	67712	R	C	CEC	54.0	53.6	0.0
Visiting research fellow—Sebastian Edwards	67713	V	O	LAC	0.0	0.0	31.4
Effectiveness of credit policies in East Asian and other countries	67719	P	C	CEC	10.0	10.0	0.0
Macroeconomic policy formulation for the transition from planned to market economies	67721	P	O	CEC	15.0	15.0	0.0
Visiting research fellow—Charles Jebuni	67726	V	O	RAD	21.8	24.3	0.0
Dealing with capital inflows	67729	D	C	CEC	34.0	33.7	0.0
The labor market in transitional socialist economies	67730	R	O	EDI	290.0	54.3	218.5
An evaluation of the effectiveness of pre-shipment inspection on trade, capital flight, and customs and other revenue problems in developing countries	67734	R	O	IEC	143.0	50.9	90.0
Accelerated growth strategies: Ghana	67735	D	C	AF4	15.0	0.0	0.0
Target zones and real exchange rates in developing countries	67738	R	O	CEC	39.0	9.0	30.0
					3,859.7	1,510.7	979.0
<i>Poverty reduction</i>							
Testing for systematic differences in initial and final project evaluation	67515	R	C	IEC	98.0	0.1	0.0
Poverty and the social dimensions of structural adjustment in Côte d'Ivoire	67526	R	C	AFT	100.0	7.7	0.0
Poverty, growth, and adjustment in Pakistan	67529	R	C	PHR	136.1	0.0	0.0
The effects of the liberalization of the grain market on smallholders in Southern Malawi	67591	R	C	AF6	50.0	26.0	0.0
Policy analysis and poverty: Applicable methods and case studies, phase II—South Asia's experience	67596	R	C	PHR	120.0	54.5	0.0
The economics of nonmarket transfers in less developed countries	67624	R	C	PHR	160.0	58.6	0.0
The analysis of public expenditures incidence: Understanding and characterizing incidence at one point	67642	R	C	CEC	19.0	0.0	0.0
Urban poverty in the context of structural adjustment	67647	P	C	INU	10.0	0.0	0.0
Drought insurance	67650	P	C	AGR	8.0	0.0	0.0
Visiting research fellow—Kenneth H. Hill	67681	V	C	PHR	29.2	24.5	0.0

Appendix table 7A Research Support Budget-funded research, by program objectives, fiscal 1992

Program objective/title	Project number	Key a/	Dept.	Total	Fiscal 1992	Remaining
				authori- zation	expenses b/	authori- zation
Food security consumption smoothing via storage and seasonal price instability in Africa	67688	P	C AGR	10.0	10.1	0.0
Data analysis for development policy	67703	D	O PHR	92.0	34.9	57.1
Targeting public expenditures for poverty alleviation	67708	D	C CEC	20.0	20.2	0.0
Macroeconomic adjustment and poverty relief: Role of social policy and household behavior	67714	R	O PHR	18.0	8.3	9.8
Labor market dynamics during the transition of a socialist economy	67720	R	O CEC	156.0	28.9	131.0
Visiting research fellow—Binayak Sen	67727	V	O RAD	13.7	17.8	0.0
Household welfare of agriculture policy reform in Malawi	67746	R	O AF6	87.0	6.3	70.5
Management of drought risks in rural areas	67751	R	O AGR	98.3	0.0	98.3
				1,225.3	297.8	366.7
<i>Human resources development</i>						
Women, public services, and income generation	67514	R	C PHR	213.7	0.0	0.0
Education, growth, and inequality in Brazil	67561	R	C CEC	155.0	35.0	0.0
The economic impact of fatal adult illness from AIDS and other causes in Sub-Saharan Africa	67571	R	O PHR	591.4	56.0	65.5
Impediments to contraceptive use and fertility decline in different environments	67572	R	O PHR	232.0	70.6	9.0
Determinants of nutritional and health outcomes in Indonesia and implications for health policy reform	67627	R	O PHR	98.0	57.1	0.0
Fertility trends in Africa	67638	R	C PHR	20.0	8.8	0.0
Causes of adult mortality in developing countries and Eastern Europe	67641	R	C PHR	20.0	1.8	0.0
Household investment in human capital and utilization and benefits from social services	67644	R	O PHR	500.0	130.6	431.4
Credit programs for the poor: Household and intra-household impact and program sustainability	67659	R	O PHR	215.0	141.6	56.3
Labor market dynamics during the transition of a socialist economy	67663	P	C CEC	9.6	0.0	0.0
The determinants and consequences of the placement of government programs in Indonesia	67674	R	O AS5	142.5	114.6	27.8
Improving school effectiveness and efficiency in developing countries	67687	R	O PHR	147.5	49.7	97.4
Evaluation of social sector investments	67690	R	O PHR	175.0	68.2	106.8
Economic and policy determinants of fertility in Sub-Saharan Africa	67691	R	O AFT	150.0	49.9	100.1
Modeling future health trends and costs	67696	R	C LA4	20.0	24.3	0.0
Nepal—primary and teacher training—improving equity for women	67698	R	C SA1	20.0	20.0	0.0
Public financing of hospital care in Brazil—patterns of use, volume, and costs	67705	P	O LA1	20.0	19.3	0.0
Human capital accumulation and economic growth: An empirical study	67711	R	O PHR	50.0	25.0	25.0
Synergistic health effects from water supply and sanitation interventions	67725	R	O INU	25.0	10.0	15.0
Gender differences in schooling decisions, employment, and earnings in Pakistan	67739	P	O PHR	15.0	0.0	15.0
Cross-national, longitudinal analysis of the curriculum of secondary education, 1920-85	67740	R	O PHR	30.0	0.0	30.0
				2,849.7	882.6	979.4
<i>Private and public sector reform</i>						
Transport taxation and road user charges in Sub-Saharan Africa	67437	R	C INU	70.0	7.0	0.0
Labor redundancy in the transportation sector	67521	R	C INU	189.0	0.0	0.0
Ex-post performance of divested state-owned enterprises	67542	R	C CEC	317.6	12.2	0.0
Political economy and public management of state mining and oil companies	67605	R	C AFT	60.0	6.0	0.0
Closed-end country funds—theoretical and empirical investigation	67607	R	C IEC	51.0	14.3	0.0
The impact of financial reform	67613	R	C CEC	96.2	34.9	0.0
Study on inter-firm and industry-government cooperation for technology development in Europe	67617	R	C AST	9.5	0.0	0.0
Intellectual property rights protection and technology transfer through foreign direct investment	67619	R	O CEI	67.0	31.1	18.9
Private sector development in Eastern Europe	67634	R	C IEN	128.8	70.6	0.0
Electric power utility efficiency study, phase II	67645	R	C IEN	100.0	46.1	0.0
Fiscal federalism issues in developing/transition economies	67656	P	C CEC	7.5	6.4	0.0
Enterprise behavior and competitiveness	67658	R	C EM4	20.0	18.0	0.0
The composition of public expenditures and economic performance	67684	P	C CEC	15.0	14.4	0.0
Strengthening accountability in public services	67693	P	C CEC	10.0	10.0	0.0
Regulations, institutions, and economic efficiency	67694	R	O CEC	200.0	95.2	104.8
Corporate financial structures in developing countries	67704	R	O CEI	107.8	45.4	62.0

Appendix table 7A Research Support Budget-funded research, by program objectives, fiscal 1992

<i>Program objective/title</i>	<i>Project number</i>	<i>Key a/</i>	<i>Dept.</i>	<i>Total authori- zation</i>	<i>Fiscal 1992 expenses b/</i>	<i>Remaining authori- zation</i>
Revenue under uncertainty—Czechoslovakia in transition	67718	R	O CEC	19.0	7.9	10.9
Economic consequences of war/peace transitions in Africa:						
Choices for public finance	67731	R	O CEC	40.0	6.7	40.0
Welfare consequences of selling public enterprises	67736	D	C CEC	35.0	35.1	0.0
Business and consumer services as a growth-promoting sector in the former Soviet Union	67743	R	O CEC	40.0	0.0	40.0
Income security for old age	67745	R	O CEC	100.0	0.1	99.9
Public goods, private goods, and social sector outcomes	67747	R	O PHR	23.5	11.0	12.5
Income distribution, fiscal policy, political instability, and growth	67749	R	O CEC	7.3	0.0	7.3
Explaining rapid growth: Chinese coastal provinces and Mexican maquiladoras	67750	R	O IEN	123.0	10.0	113.0
				1,837.2	482.3	509.3
<i>Financial intermediation</i>						
Japanese FDI in developing countries: Trends, determinants, and policies	67657	R	C IEC	76.5	51.4	0.0
Financial linkage development under liberalization in Sub-Saharan Africa	67660	P	C IEN	6.3	2.9	0.0
Investment decision, capital market imperfections, and the effects of financial liberalization	67672	R	C CEC	55.2	55.3	0.0
Financial linkages in Africa	67702	R	C IEN	20.0	23.6	0.0
Central bank independence: Its political and institutional foundations and its economic effect	67707	R	O CEC	22.0	11.1	10.9
Secondary market prices for developing country debt: Data collection and initial analysis	67715	R	O IEC	39.3	17.2	21.5
Center-local fiscal and financial relations	67723	P	O AS3	10.0	9.9	0.0
Risk-weighted capital adequacy requirements: An application to developing country banks	67741	R	O CEC	20.0	8.0	12.0
				249.3	179.3	44.4
<i>Environment and forestry</i>						
Improved accounting of natural resources and the environment for more sustainable resource management	67543	R	C ENV	100.0	8.2	0.0
Pollution and the choice of economic policy instruments in developing countries	67648	R	O CEC	419.0	177.3	191.0
Visiting research fellow—Gordon Hughes	67652	V	C WDR	49.2	45.2	0.0
Environmental regulation and economic growth	67675	P	C LA2	12.9	7.0	0.0
Forestry sector analysis	67689	P	C AF4	18.3	17.7	0.0
India cotton pesticide immunity	67692	R	C CEC	12.0	12.9	0.0
Economic growth and trade in Western Africa: Implications of the degradation of the vegetation cover, phase II	67697	R	O CEC	184.0	126.4	58.1
Property rights, rent dissipation, and environmental degradation in the Brazilian Amazon	67724	R	O LAT	225.0	96.0	129.0
World energy subsidies, the greenhouse effect, and government revenues	67728	R	O CEC	38.9	11.0	28.4
Enterprise ownership and pollution	67744	R	O ENV	39.6	11.7	24.6
				1,098.8	513.5	431.0
<i>Natural resources</i>						
Practical framework for evaluating mineral payment/taxation schemes	67545	R	C CEC	159.0	5.5	0.0
How do inadequate insurance markets affect commodity price stabilization schemes?	67706	R	C IEC	19.2	19.1	0.0
Agricultural land policies, insecurity of property rights, and small farm productivity in selected areas in Latin America and the Caribbean	67742	P	O AGR	11.0	0.0	11.0
				189.2	24.6	11.0
<i>Basic infrastructure and urban development</i>						
Tunis and Rabat water demand study	67540	R	C INU	19.9	0.0	0.0
The efficiency of urban land markets	67639	P	C INU	15.0	0.0	0.0
Housing indicators for policymaking: An extensive international survey	67668	R	C INU	330.0	239.9	0.0
Infrastructure bottlenecks, private provisions, and industrial productivity: Indonesia and Thai cities	67671	R	O INU	370.0	118.3	352.5
Visiting research fellow—Simeon I. Ajayi	67678	V	C AF4	57.7	55.3	0.0
Visiting research fellow—Anna Luiza Ozorio de Almeida	67679	V	O LAT	34.9	22.1	0.0
Price and tax sensitivity of crude oil supplies	67683	P	C IEC	6.9	6.8	0.0
The marginal productivity of infrastructure in developing countries	67695	R	O INU	75.0	39.0	36.0
Analysis of the results from the extensive survey of housing indicators in 52 countries	67748	R	O INU	40.0	0.0	40.0
				949.4	481.3	428.5

Appendix table 7A Research Support Budget-funded research, by program objectives, fiscal 1992

Program objective/title	Project			Total	Fiscal 1992	Remaining
	number	Key a/	Dept.	authori- zation	expenses b/	authori- zation
<i>Economic management</i>						
Macroeconomic policies, crisis, and growth in the long run	67399	R C	LAT	2,500.0	198.1	0.0
Second international conference on African economic issues	67616	B C	VPDEC	110.0	110.7	0.0
Accounting for CPEs in transition	67618	R C	IEC	181.1	24.7	0.0
Latin American meetings of the Econometric Society	67628	B O	LACVP	120.0	30.0	60.0
Book on inflation and stabilization process	67630	D C	CEC	20.0	10.0	0.0
Investigating equipment investment and economic growth	67643	R C	VPDEC	20.0	13.0	0.0
Operations and maintenance in developing countries	67664	P C	LAC	10.6	7.7	0.0
Do national policies affect long-run growth?	67666	R O	CEC	177.7	76.5	56.8
The international economic environment and productivity growth in industrial and developing countries	67667	R O	IEC	100.0	67.7	27.4
Commodity prices and the macroeconomic policy mix in industrial countries	67676	R C	IEC	18.5	18.0	0.0
Visiting research fellow—Sergei I. Shatalov	67682	V C	IEC	23.5	31.5	0.0
The economic impact of military expenditures	67685	R C	CEC	20.0	14.9	0.0
Impact of market-oriented policy reforms on households in rural China	67716	R O	PHR	59.2	7.7	51.5
Reestimation of China's national accounts and growth rates	67717	R O	EA2	15.0	11.1	3.9
International conference on culture and development: An agenda for action in Sub-Saharan Africa	67722	D C	AFT	19.5	19.5	0.0
World experience of trade liberalization conference	67732	D C	EC3	20.0	20.4	0.0
Encouraging economic research in the Middle East and North Africa	67733	B O	MNA	150.0	20.1	129.9
The macroeconomic situation in Eastern Europe—World Bank/IMF conference	67737	D C	CEC	10.0	10.0	0.0
				3,575.1	691.6	329.4
<i>Research administration</i>						
Research review and evaluation	67228		O RAD	876.2	101.1	0.0
World Bank Economic Review	67357	D O	RAD	553.3	136.4	0.0
World Bank Research Observer	67361	D O	RAD	226.0	96.0	0.0
World Bank Policy Research Bulletin and Development Briefs	67371	D O	RAD	136.2	36.5	0.0
Visiting Research Fellow Program	67462	V O	RAD	1,049.5	13.3	0.0
Annual Conference on Development Economics	67482	D O	RAD	748.7	284.3	0.0
				3,589.9	667.6	0.0
<i>Net adjustment</i>					0.8	
<i>Total research support budget</i>				19,423.4	5,732.3	4,078.7

a. R = research; P = research preparation D = research dissemination; B = capacity building; V = visiting research fellow; O = active; and C = closed.

b. Projects with no expenses in fiscal 1992 typically started late or closed early in the fiscal year.

Source: Research Advisory Staff.

Appendix table 7B Research Support Budget-funded research, by program objective, fiscal 1993

Program objective/title	Project number	Key	al	Department	Total author-ization	Fiscal 1993 expenses b/	Remaining author-ization
<i>Adjustment, trade, and debt</i>							
Macroeconomic aspects of foreign exchange markets in developing countries	67530	R	C	PRDTM	265.0	0.0	0.0
The political economy of structural adjustment	67637	R	C	PRDTM	248.9	9.8	0.0
Cost of protection index	67649	R	C	IECIT	98.1	29.8	0.0
Equipment prices and trade policy for developing country manufacturing industries	67661	R	C	PRDTP	56.0	30.7	0.0
Assessing the Mexico-United States free trade agreement	67665	R	C	LA2C1	249.1	58.7	0.0
License prices and rent-sharing in the Multi-Fibre Arrangement	67669	R	C	IECIT	86.5	10.2	0.0
Commodity exports and real income in Africa	67670	R	O	PRDTP	131.6	46.9	20.0
Design of tariff reform: Theory, evidence, and implications	67677	R	C	PRDTP	19.0	0.0	0.0
Volume on industrial competition, productivity, and trade regimes	67710	D	C	PRDTP	57.0	22.5	0.0
Visiting research fellow—Sebastian Edwards	67713	V	C	LACCE	0.0	5.4	0.0
Secondary market prices for developing country debt: Data collection and initial analysis	67715	R	C	IECDI	39.3	21.5	0.0
Macroeconomic policy formulation for the transition from planned to market economies	67721	P	C	PRDTM	15.0	0.0	0.0
An evaluation of the effectiveness of preshipment inspection on trade, capital flight, and customs, and other revenue problems of developing countries	67734	R	O	IECIT	143.0	81.0	9.0
Target zones and real exchange rates in developing countries	67738	D	O	PRDTM	39.0	30.5	0.0
Income distribution, fiscal policy, political instability, and growth	67749	R	C	PRDPE	7.3	7.3	0.0
External debt and burden sharing	67755	R	O	IECDI	30.0	27.0	3.0
Visiting research fellow—Jorge Quiroz	67760	V	O	LATAD	45.3	18.8	26.6
Foreign exchange auctions and exchange rate unification in Sub-Saharan Africa	67764	R	C	PRDTM	39.0	41.0	0.0
The African adjustment study	67767	R	O	PRDTM	40.0	39.3	0.0
Abandonment of the fixed exchange rate regime in Latin America	67771	R	O	LA1CO	39.0	34.8	4.0
Exchange rate commitments and central bank independence	67777	R	O	PRDTM	18.0	11.9	6.0
Issues of stabilization in transition economies	67783	R	C	ECAVP	37.3	36.8	0.0
Understanding bilateral trade flows in East Asia	67786	R	O	PRDTP	30.0	19.8	10.2
Informational value of import license auctions: An empirical study	67791	R	O	PRDTP	99.6	19.5	79.8
Incentives and resource allocation in Indian agriculture	67804	R	C	PRDTP	8.0	8.1	0.0
The ruble shortage phenomenon in members of the ruble currency zone	67808	R	O	EC4C2	10.0	10.0	15.0
A deep-parameter approach to the real exchange rate and trade distortions	67809	R	C	PRDTP	27.0	25.2	0.0
Foreign direct investments in a macroeconomic framework	67815	R	O	IECDI	37.0	10.5	26.5
Antidumping: Follow-up on newly emerging issues	67816	R	O	PRDTP	25.0	12.1	19.0
Visiting research fellow—Yoshiyasu Ono	67817	V	O	PRDTM	19.8	25.0	0.0
Cusiana and the Colombian economy in the 1990s	67819	D	O	PRDTM	37.0	0.0	37.0
Regionalism and South Asia's trade	67822	R	O	SASVP	38.7	15.9	22.8
The effect of regionalism on trading prospects of LMICs	67843	R	O	IECAP	17.7	0.0	17.7
The effect of increased north-south trade on employment and the distribution of income in the north and south	67844	R	O	IECAP	17.7	0.0	17.7
					2,070.7	709.9	314.2
<i>Poverty reduction</i>							
Credit programs for the poor: Household and intrahousehold impacts and program sustainability	67659	R	O	PHRWD	215.0	56.8	0.0
Evaluation of social sector investments	67690	R	O	LA2HR	175.0	31.0	79.6
Data analysis for development policy	67703	D	C	PRDPH	92.0	53.7	0.0
Macroeconomic adjustment and poverty relief roles of social policy and household behavior	67714	R	C	PRDPH	18.0	10.1	0.0
Impact of market-oriented policy reforms on households in rural China	67716	R	O	PRDPH	59.2	41.9	21.0
Visiting research fellow—Binayah Sen	67727	V	C	RAD	13.7	15.2	0.0
Household welfare effects of agriculture policy reform in Malawi	67746	R	C	AF6PH	87.0	32.9	0.0
Management of drought risks in rural areas	67751	R	O	AGRAP	98.3	85.2	13.0
Indigenous peoples and poverty in Latin America—an empirical analysis	67768	R	C	LATDR	40.0	32.1	0.0
Household responses to seasonal income fluctuations in rural India	67780	R	C	PRDPH	31.0	30.5	0.0
Poverty in India, 1950-90	67782	R	O	PRDPH	72.0	33.0	39.6
Spontaneous institutions and sustainable rural development in Africa	67788	R	O	AFTDR	20.0	10.0	10.0
Innovative self-targeting techniques: Do they improve incidence?	67814	R	O	MN1AG	39.7	27.0	12.7
Visiting research fellow—Richardo Paes de Barros	67818	V	O	PRDDR	19.2	8.5	0.0
LSMS product development	67820	P	O	PRDPH	15.0	2.0	13.0
Revision of the LSMS household-based agricultural activities survey module	67821	R	O	PRDPH	26.7	5.4	21.3
Rural poverty and agriculture in Mexico	67823	R	O	PRDTP	39.5	7.0	32.5
Welfare and institutions in Asia	67828	R	O	EA2DR	39.0	0.0	39.0
World Bank and UNDP strategies for reducing poverty: Comparisons in South and East Asia	67836	R	O	SA3DR	14.0	0.0	14.0
					1,114.3	482.4	295.7
<i>Human resources development</i>							
The economic impact of fatal adult illness from AIDS and other causes in Sub-Saharan Africa	67571	R	O	PRDPH	591.4	57.2	6.6
Impediments to contraceptive use and fertility decline in different environments	67572	R	C	PHRHN	232.0	0.9	0.0
Determinants of nutritional and health outcomes in Indonesia and implications for health policy reform	67627	R	C	PHRHN	98.0	0.0	0.0

Appendix table 7B Research Support Budget-funded research, by program objective, fiscal 1993

<i>Program objective/title</i>	<i>Project number</i>	<i>Key a/</i>	<i>Department</i>	<i>Total authorization</i>	<i>Fiscal 1993 expenses b/</i>	<i>Remaining authorization</i>
Household investment in human capital and utilization and benefits from social services	67644	R O	PRDPH	500.0	130.7	193.2
The determinants and consequences of the placement of government programs in Indonesia	67674	R C	EA3PH	142.5	13.3	0.0
Improving school effectiveness and efficiency in developing countries	67687	R O	PHREE	147.2	74.9	20.0
Economic and policy determinants of fertility in Sub-Saharan Africa	67691	R O	PRDPH	150.0	89.8	10.0
Public financing of hospital care in Brazil—patterns of use, volume, and costs	67705	P C	LA1HR	20.0	0.0	0.0
Human capital accumulation and economic growth: An empirical study	67711	R C	PRDPH	50.0	25.5	0.0
Labor market dynamics during the transition of a socialist economy	67720	R O	PRDTM	156.0	100.0	45.0
Synergistic health effects from water supply and sanitation interventions	67725	R C	INUWS	25.0	11.0	0.0
The labor market in transitional socialist economies	67730	R O	EDIEM	290.0	118.3	103.5
Gender differences in schooling decisions, employment, and earnings in Pakistan	67739	P C	SASVP	15.0	12.5	0.0
Cross-national, longitudinal analysis of the curriculum of secondary education, 1920–85	67740	R C	PHREE	30.0	25.9	0.0
Income security for old age	67745	R C	PRDFP	100.0	100.3	0.0
Public goods, private goods, and social sector outcomes	67747	R C	PHRHN	23.5	11.3	0.0
The dynamic interrelationship between nutrition morbidity and labor productivity in Rwanda	67752	R O	PRDPH	38.5	30.6	8.5
Visiting research fellow—Anat Levy	67756	V C	PRDTP	29.0	27.8	0.0
Age-related barriers to the acquisition of literacy	67759	P C	SA1PH	7.0	7.0	0.0
Visiting research fellow—Robert H. Cassen	67761	V C	PRDDR	8.3	14.8	0.0
The evolution of labor markets and the social safety net in Central and Eastern Europe	67762	R C	EC2HR	38.9	27.5	0.0
Gender-specific and age cohort-specific education stock for developing countries	67769	R C	PHREE	18.5	18.0	0.0
Labor markets and employment issues: Kenya and Côte d'Ivoire	67773	R O	AFRCE	38.5	12.5	28.0
Workshop on associational life and economic development in Africa	67776	D C	AFTIM	14.3	14.3	0.0
Public-private interactions in the health sector in developing countries	67795	R O	MN2PH	30.0	30.0	0.0
Private interhousehold transfers in Poland, 1986–91	67796	R O	PRDPH	40.0	22.9	20.0
The costs and outputs of Turkish higher education	67805	R O	EMTHR	19.0	0.0	19.0
International conference on culture and development in Africa	67806	D C	ESD	10.0	10.0	0.0
Training, technology capability, and firm-level productivity	67811	R O	PSDPR	38.8	10.0	28.8
Female labor market participation and child welfare in Africa	67812	R O	PRDPH	24.0	10.0	14.0
Secondary education in the newly industrializing countries of Asia	67827	R O	ESP	40.0	6.5	34.0
Measuring the impact of user fee increases: The second round of the Indonesian resource mobilization study	67830	R O	EA3PH	305.5	0.0	305.5
Enterprise training strategies and productivity: A cross-national study	67839	R O	PSDPR	195.2	0.0	195.2
Effects of fertility and infant and child mortality	67845	R O	PHN	35.0	0.0	35.0
The impact of labor market policies and institutions on economic performance	67846	R O	PRDTP	150.0	0.0	150.0
				3,651.0	1,013.5	1,216.2
<i>Private and public sector reform</i>						
Industrial reforms and productivity in Chinese enterprise	67538	R C	PRDTM	409.6	43.7	0.0
Intellectual property rights protection and technology transfer through foreign direct investment	67619	R C	CEIED	67.0	18.9	0.0
Regulations, institutions, and economic efficiency	67694	R C	PRDFP	200.0	105.9	0.0
Enterprise behavior and economic reforms: A comparative study in Central and Eastern Europe	67699	R O	PRDTM	445.3	207.5	149.0
Corporate financial structures in developing countries	67704	R C	CEIED	107.8	62.2	0.0
Business and consumer services as a growth-promoting sector in the former Soviet Union	67743	R C	PRDTM	40.0	40.0	0.0
Explaining rapid growth: Chinese coastal provinces and Mexican maquiladoras	67750	R O	IENIN	123.0	93.0	20.0
State enterprise behavior in Poland during the economic transformation program	67758	R C	EC2PL	25.0	22.3	0.0
Strengthening accountability in public services	67765	R O	PRDFP	96.0	38.7	57.4
Survey of service firms in St. Petersburg	67789	R C	PRDTM	15.0	14.9	0.0
Tourism in small island economies	67803	P O	LA3C2	15.0	10.0	6.6
Conference on the institutional foundations of regulation and private investment in utilities	67813	D C	PRDFP	18.0	18.0	0.0
Reforms and productivity in Chinese enterprise II	67824	R O	PRDTM	40.0	15.0	25.0
Enterprise transformation in Poland	67825	R O	CEIED	25.0	0.0	25.0
Visiting research fellow—Luis A. Sanchez	67834	V O	PRDDR		0.0	0.0
Informal sector in Africa	67838	P O	AF6CO	13.0	0.0	13.0
The Russian enterprise in transition	67840	R O	PRDTM	38.8	15.0	23.8
Corporate governance in Central Europe	67842	R O	PRDTM	236.0	0.0	236.0
The welfare consequences of divestiture in Bangladesh	67847	P O	PRDFP	15.0	0.0	15.0
				1,929.5	705.1	570.8
<i>Financial intermediation</i>						
Central bank independence: Its political and institutional foundations and its economic effects	67707	R C	PRDTM	22.0	6.6	0.0
Risk-weighted capital adequacy requirements: An application to developing country banks	67741	R C	PRDFP	20.0	12.0	0.0
Financial integration and development in Sub-Saharan Africa	67774	R O	IENIN	148.8	62.8	86.0
Visiting research fellow—L. Balcerowicz	67793	V O	FSD		0.0	0.0

Appendix table 7B Research Support Budget-funded research, by program objective, fiscal 1993

Program objective/title	Project			Total author- ization	Fiscal 1993 expenses b/	Remaining author- ization
	number	Key a/	Department			
Conference on portfolio investment in developing countries	67794	D C	IECDI	38.0	39.7	0.0
Market structure and market outcomes: The Mexican stock exchange	67797	R O	CEIED	34.1	15.5	18.6
Equity portfolio flows to developing countries	67801	R O	IECDI	80.0	44.0	37.0
Visiting research fellow—Jean-Philippe Platteau	67807	V O	AGRAP	17.3	18.6	0.0
Stock market development and financial intermediary growth	67837	R O	PRDFP	91.0	0.0	91.0
External financing in emerging markets: An analysis of market responses	67849	R O	IECDI	15.0	0.0	15.0
				466.2	199.1	247.6
<i>Environment and forestry</i>						
Pollution and the choice of economic policy instruments in developing countries	67648	R O	PRDPE	419.0	150.8	37.5
Visiting research fellow—Ann Luiza Oozorio de Almeida	67679	V C	LATEN	34.9	27.6	0.0
Economic growth and trade in Western Africa: Implications of the degradation of the vegetation cover—phase II	67697	R C	PRDTP	184.0	57.0	0.0
Property rights, rent dissipation, and environmental degradation in Brazilian Amazon	67724	R O	LATEN	225.0	79.3	24.1
Enterprise ownership and pollution	67744	R C	PRDEI	39.6	24.0	0.0
Economic shocks and the global environment	67775	R O	DPG	27.0	24.2	3.0
The economics of clean technology diffusion in developing countries	67779	P O	PRDEI	14.9	14.9	0.0
Econometric analysis of pollution abatement costs	67781	R C	PRDEI	39.9	33.7	0.0
Conference on environmental economics	67785	R C	LATEN	40.0	32.8	0.0
				1,024.3	444.2	64.7
<i>Natural resources</i>						
Agricultural land policies, insecurity of property rights, and small farm productivity in selected areas in IAC	67742	P C	AGRAP	11.0	11.0	0.0
Urbanization, agricultural development and land allocation	67763	P C	AGRAP	12.0	11.5	0.0
Visiting research fellow—Z. Lerman	67833	V O	AGRAP		0.0	0.0
				23.0	22.5	0.0
<i>Basic infrastructure and urban development</i>						
Infrastructure bottlenecks, private provisions, and industrial productivity: Indonesia and Thai cities	67671	R O	INURD	370.0	103.3	155.7
The marginal productivity of infrastructure in developing countries	67695	R C	INUDR	75.0	39.4	0.0
Analysis of the results from the extensive survey of housing indicators in 52 countries	67748	R C	INURD	40.0	41.2	0.0
Institutional analysis and structured learning in the water supply sector	67754	P C	INUWS	15.0	0.0	0.0
Visiting research fellow—R. Prud'homme	67757	V C	INUTD	40.0	32.2	0.0
Enhancing urban productivity: Determinants of optimal expenditure on infrastructure, human resources, and consumption of public goods	67766	R C	EC1CO	39.8	37.0	0.0
Infrastructure inadequacies in Mexico	67778	P C	LA2C1	10.0	9.9	0.0
Infrastructure inadequacies in Mexico	67798	R C	LA2C1	39.6	36.8	0.0
				629.5	299.8	155.7
<i>Economic management</i>						
Latin American meetings of the Econometric Society	67628	B O	LACVP	120.0	30.0	30.0
Do national policies affect long-run growth?	67666	R C	PRDTM	177.7	65.9	0.0
The international economic environment and productivity growth in industrial and developing countries	67667	R C	IECDR	100.0	26.4	0.0
Reestimation of China national accounts and growth rates	67717	R C	EA2DR	15.0	3.9	0.0
Revenue under uncertainty—Czechoslovakia in transition	67718	R C	PRDPE	19.0	10.6	0.0
Center-local fiscal and financial relations	67723	P O	EA2DR	10.0	0.0	0.0
World energy subsidies, the greenhouse effect, and government revenues	67728	R C	PRDPE	38.9	26.5	0.0
Economic consequences of war/peace transitions in Africa: Choices for public finance	67731	R O	PRDPE	40.0	25.6	5.0
Encouraging economic research in the Middle East and North Africa	67733	R O	MNAV P	150.0	127.7	0.0
Visiting research fellow—Changyong Rhee	67753	V C	PRDDR	31.0	31.2	0.0
Subnational finance in transition economies: Broadening the framework for analysis	67770	R O	PRDPE	19.0	0.0	18.5
Visiting research fellow—Salvador Valdes	67772	V C	RAD	27.0	31.0	0.0
Determinants of project performance	67784	P C	OEDD2	15.0	11.9	0.0
Conference on "How Do National Policies Affect Long-run Growth"	67787	D C	PRDTM	30.2	31.2	0.0
Seminar on economic reform in developing countries: Issues for the 1990s	67790	D O	RAD	20.0	16.6	10.0
Good policy, good luck, or good location?	67792	P O	AF4DR	15.0	11.4	0.0
Construction of an integrated data base software for FSU economic accounts	67799	R C	PRDTP	13.3	13.3	0.0
Evaluation of applied macroeconomic models for developing countries	67802	R C	PRDTM	27.5	27.3	0.0
Economic consequences of democratic change in developing countries	67810	R C	PHN	39.4	26.0	0.0
Patterns of growth: Further work on national policies and long-run growth	67826	R O	PRDTM	40.0	0.0	40.0
Technology spillovers, agglomeration, and foreign direct investment	67829	R O	PRDTP	25.0	14.6	10.5
Agricultural marketing in the former Soviet Union	67831	R O	ECAVP	22.5	0.0	22.5
The economic role of the state in nations of the former Soviet Union	67832	R O	EC4C2	25.0	12.0	13.0
African economic research consortium, phase III	67835	R O	AFRCE	750.0	150.0	600.0
A critical evaluation of the quality of state intervention in Turkey: A four industry comparison	67841	R O	PSDPR	56.5	0.0	56.5
				1,826.9	693.2	805.9
<i>Research administration</i>						

Appendix table 7B Research Support Budget-funded research, by program objective, fiscal 1993

<i>Program objective/title</i>	<i>Project number</i>	<i>Key a/</i>	<i>Department</i>	<i>Total author-ization</i>	<i>Fiscal 1993 expenses b/</i>	<i>Remaining author-ization</i>
Research review and evaluation	67228	O	RAD	876.2	82.3	0.0
World Bank Economic Review	67357	O	RAD	553.3	133.7	0.0
World Bank Research Observer	67361	O	RAD	226.0	102.4	0.0
World Bank Policy Research Bulletin and Development Briefs	67371	O	RAD	136.2	65.6	0.0
Visiting Research Fellow Program	67462	O	RAD	1,049.5	0.6	0.0
Annual Conference on Development Economics	67482	O	RAD	748.7	303.6	0.0
				3,589.9	688.1	0.0
<i>Net adjustment</i>					11.6	
<i>Total research support budget</i>				16,325.1	5,269.4	3,670.8

a. R = research; P = research preparation; D = research dissemination; V = visiting research fellow; O = active; and C = closed.

b. Projects with no expenses in fiscal 1993 typically started late or closed early in the fiscal year.

Source: Research Advisory Staff.

**Appendix table 8 The World Bank Visiting Research Fellows Program: Research fellows at the Bank during fiscal 1992–93**

<i>Name</i>	<i>Nationality</i>	<i>Research topic</i>
Simeon Ibiyayo Ajayi	Nigerian	Capital flight and external debt in Nigeria
Anna Ozorio de Almeida	Brazilian	Sustainable settlement in the Brazilian Amazon
Richardo Paes de Barros	Brazilian	Inequality, poverty, and social spending in Brazil
Robert H. Cassen	British	Implications of trends in manufacturing development for human resource policies
Csaba Csaki	Hungarian	Agricultural transition in Eastern Europe and other reforming socialist economies
Sebastian Edwards	Chilean	A comparative cross-country analysis of reforms in Latin America in the post-debt crisis period
Tatsuo Hatta	Japanese	The design and implementation of tariff reform and economic integration
Kenneth H. Hill	British	The demography of poverty in Sub-Saharan Africa
Gordon Hughes	British	Economic reform, industrial efficiency, and the environment
Charles D. Jebuni	Ghanaian	Accelerated growth study for Ghana
Leonardo Leiderman	Israeli	Transition from stabilization to growth
Anat Levy	Israeli	Efficiency and equity; employment and growth in the labor market
Yoshiyasu Ono	Japanese	Theoretical industrial organization, international trade and finance, macro dynamics
Jean-Philippe Platteau	French	Village credit and insurance mechanisms
Remy Prud'homme	French	Institutional decentralization and motorization issues in developing countries
Jorge Quiroz	Chilean	Analysis of current price stabilization and neutralization of the volatility arising from international markets
Binayak Sen	Bangladeshi	Poverty in Asia
Sergei I. Shatalov	Russian	Future Russian economic involvement in the developing world
Pravin Kantilal Trivedi	Indian	Investment and pricing policies for perennial tree crop producers in developing countries
Salvador Valdes	Chilean	Pension economics and social security

Source: Research Advisory Staff.