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# Dynamics of Rural Development in Northeast Brazil: New Lessons from Old Projects

December 16, 1991

Operations Evaluation Department

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### Abbreviations and Acronyms

APCR	Apoio para Pequenas Comunidades Rurais (Support to Small Communities--Community Participation Component)
BANDEPE	Banco de Desenvolvimento do Estado de Pernambuco (State Development Bank of Pernambuco)
BNDES	Banco Nacional de Desenvolvimento Econômico e Social (National Bank for Economic and Social Development)
CPATSA	Centro de Pesquisas da Agricultura do Semi-Árido (Center for Research on Dryland Tropical Agriculture)
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária (Brazilian Agricultural Research Agency)
RD	Rural Development
OED	Operations Evaluation Department
PAPP	Programa de Apoio para o Pequeno Produtor (Program of Assistance to the Small Farmer)
POLONORDESTE	Programa de Desenvolvimento de Áreas Integradas do Nordeste (Program of Integrated Development for the Northeast)
SUDENE	Superintendência de Desenvolvimento do Nordeste (Northeast Regional Development Agency)
WB	World Bank

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THE WORLD BANK  
Washington, D.C. 20433  
U.S.A.

Office of Director-General  
Operations Evaluation

December 16, 1991

**MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT**

**SUBJECT: Dynamics of Rural Development in Northeast Brazil:  
New Lessons from Old Projects**

Attached, for information, is a copy of a report entitled "Dynamics of Rural Development in Northeast Brazil: New Lessons from Old Projects" prepared by the Operations Evaluation Department.



Attachment

**DYNAMICS OF RURAL DEVELOPMENT IN NORTHEAST BRAZIL:**  
**NEW LESSONS FROM OLD PROJECTS**

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## DYNAMICS OF RURAL DEVELOPMENT IN NORTHEAST BRAZIL: NEW LESSONS FROM OLD PROJECTS

### PREFACE

Between 1975 and 1987, the Brazilian government committed US\$3.3 billion to 22 integrated rural development projects in the ten states of Northeast Brazil and a regionwide land-tenure project--of which the Bank financed 42% or US\$1.4 billion. A "first generation" of these projects included roughly a dozen components--ranging from agricultural credit and extension through feeder roads and electrification to health and education, though any one project would not include all of them. The staples of each project were credit (23%), feeder roads (20%), land-related activities (16%), and agricultural extension (14%)--accounting for 72% of appraised costs. In an attempt to reduce the complexity of the projects and focus more exclusively on agricultural production, a second generation of projects eliminated health, education, and roads--as well as some smaller components. Credit (30%), extension (24%), and a new community-participation component (16%) accounted for 70% of expenditures projected at appraisal; associated land-related activities were unified in a separate regionwide land-tenure project (an additional 16%).

This study, carried out by a consultant on behalf of the Operations Evaluation Department (OED), under the general direction of OED staff, looks "within" these 22 projects seeking to identify and explain which components worked best. A standard OED evaluation study would consider one or more projects as a whole, and what explained the overall project performance. This study takes a more micro-view, looking at individual project components such as rural water supply, agricultural credit, rural roads, etc., and considers how well these components performed. Not surprisingly it was found that a component which had worked well in one state at one point in time, could nevertheless have worked poorly in another state, or even in the same state at a different point in time. However, this finding warns against simplistic rules of thumb, such as "rural water works or does not work", as a guide to rural development.

Rather, almost any component can be made to work if it has both strong political support at the state level, and is tailored to the immediately felt needs of the beneficiaries. Indeed most components can be made to work if they enjoy either state level political support, or a strong demand from the beneficiaries. Unfortunately this implies that the design and implementation of successful rural development projects is likely to be much more demanding than if simple rules of thumb applied.

In 1987, OED presented a report "Rural Development: World Bank Experience, 1965-86" (OED, 1988) to the Joint Audit Committee, and subsequently to the Executive Directors. This study showed that rural development projects, particularly "new style" area development projects involving multi-components had encountered a wide range of implementation problems. This report prompted questions by the Executive Directors as to (a) what does work in rural development, and (b) what are the pre-conditions for success? The present study is one of a series initiated by OED in response to these queries (see also "Annual Review of Evaluation Results, 1990," Chapter V: Rural Development Revisited, OED, August 1991).

Research for this study was carried out over the period of a year (1988-1989), including three five week visits to the projects, extensive interviews carried out by a resident research assistant, examination of Bank files, Staff Appraisal Reports, Project Completion Reports, and Project Performance Audit Reports; and, intensive interviews with Bank staff. The contribution of the many government officials, researchers, and Bank staff who have given freely of their time and experience is gratefully acknowledged.

## DYNAMICS OF RURAL DEVELOPMENT IN NORTHEAST BRAZIL: NEW LESSONS FROM OLD PROJECTS

### EXECUTIVE SUMMARY

1. In 1974, as part of a wider program targeted at poverty reduction in general, the Bank announced a bold new approach to reducing rural poverty and stimulating agricultural growth. Born out of dissatisfaction with the inability of past development efforts to reduce rural poverty and inequality, the "new style" rural development (RD) projects differed from, and supplemented, previous interventions in two ways. They targeted the poor directly with agricultural production services and subsidies. And they provided certain regions with a complete array of development investments, ranging from roads to agricultural credit to health-regions chosen for their agricultural potential and high concentration of small farmers. By 1986, twelve years later and after US\$19.1 billion (current) of Bank commitments to RD worldwide, of which US\$6.3 billion has been for "new style" area development projects, the new approach had fallen into disfavor. Myriad problems had plagued the implementation of the projects, and serious questions had been raised about their effectiveness at reducing poverty and increasing agricultural productivity. These concerns, outlined below, were laid out in a major review of the RD experience carried out by OED in 1987.

2. Though targeted rural development deserved much of the criticism it received, some of these projects--or parts of them--performed well. Though the exceptions in themselves do not justify bringing back this form of RD, they raise the question as to how some projects could have worked well with a design and in an environment now considered not conducive to good performance. More constructively, if certain projects or activities could stand the test of such adverse circumstances, they certainly must have some lessons to offer about improving the design of programs today. Though the Bank has largely abandoned the "new style" RD approach, it con-

tinues to devote major policy attention and resources to the same sectors, individually or in pairs, that were all linked together in the RD projects--agricultural research, agricultural extension, rural finance, irrigation, farm-to-market roads, drinking water, health, education.

3. Because past evaluations of the RD experience have been more illuminating about the causes of failure than about the causes of success--as the above-noted OED review itself pointed out--they have thrown more light on what not to do than on what to do. This study seeks to do the opposite. It identifies patterns that ran across a variety of instances of better performance in a set of 23 RD projects in Northeast Brazil--one of the Bank's most comprehensive RD programs. The study asks what lessons these patterns of good performance reveal about project design and, more generally, about the role of the public sector in rural development./1 As the reader will see, the answers to this question do not add up to a case in favor of or against "integrated rural development," but are of relevance to a wide variety of projects and sectors in which the Bank operates today. As discussed in footnote 1 (and Annex 1), the Government of Brazil has been concerned that readers should not take this study as being in any way a substitute for an evaluation of the RD portfolio as a whole.

4. Various problems have afflicted certain types of the Bank's rural development projects worldwide, including those of the Northeast: (1) too many components and excessive complexity, (2) the lack of productivity-increasing technical packages for small farmers, (3) the absence of beneficiary participation in project design and implementation, and (4) a policy environment that penalized agriculture. The Northeast projects suffered, in addition, from (1) chronic delays in

the transfer of Brazilian counterpart funds to the project units and executing agencies, and (2) the high and increasing rates of inflation (up to triple digits), and hence fiscal crisis, experienced by Brazil in the 1980s. This study asks why certain projects or agencies were sometimes free of these problems, or how they were able to perform well despite the presence of such adversity.

### The Northeast projects

5. Between 1975 and 1987, the Brazilian government committed US\$3.3 billion to 22 integrated rural development projects in the ten states of Northeast Brazil<sup>2/2</sup> and a nationwide land-tenure project--of which the Bank financed 42% or US\$1.4 billion. A "first generation" of these projects included roughly a dozen components--ranging from agricultural credit and extension through feeder roads and electrification to health and education, though any one project would not include all of them. The staples of each project were credit (23%), feeder roads (20%), land-related activities (16%), and agricultural extension (14%)--accounting for 72% of appraised costs. In an attempt to reduce the complexity of the projects and focus more exclusively on agricultural production, a second generation of projects eliminated health, education, and roads--as well as some smaller components. Credit (30%), extension (24%), and a new community-participation component (16%) accounted for 70% of expenditures projected at appraisal; associated land-related activities were unified in a separate nationwide land-tenure project (an additional 16%).<sup>2/3</sup>

6. Typical project organization involved the Bank and several levels of the Brazilian government--the federal government ministries, the Northeast regional development authority, semi-official banks, and the state-level project units and executing agencies. The project-coordinating units, set up in state departments of planning or agriculture, were in charge of designing the annual programs and supervising their implementation, but had neither executing responsibilities nor the formal power to grant funds or withhold them from the executing agencies--a subject treated in

Chapter 2; an exception was the community-participation component (APCR)<sup>2/4</sup> in the second-generation projects, described momentarily, in which the project units shared formal implementation responsibilities with rural labor unions, extension services, and/or some farmer cooperatives. Municipal governments, though often represented on ad hoc councils that vetted the APCR sub-projects, had no formal place in the projects as such, but sometimes ended up making important contributions that were not anticipated (Chapters 2 & 3).

7. The community-participation component, at US\$222 million, represented one of the most significant attempts of the Bank to make the implementation of its RD projects more participatory. The APCR fund, with the assistance of an average of 36 community agents and supervisory staff per state, makes grants of up to US\$10,000 to associations formed in communities of less than 5,000 inhabitants: (1) 65% for community-owned ventures like grain-milling facilities, seed banks, input-supply stores, and storage facilities, (2) 25% for small works projects (road repair, community laundries, public toilets), and (3) 15% for institution-building in community organizations, used mainly by the rural labor federations for training.

### Good performance (Chapter 2)

8. Defining "success" or, more accurately, "better performance," turned out to be more difficult than originally expected. Early in the review, the cases of better performance seemed to be falling into three categories: (1) whole projects (Tabuleiros Sul in Sergipe, Ibiapaba in Ceará), (2) components (roads, electrification, drinking water, health, and education vs. agricultural credit, research, and extension), and (3) agencies (the project unit in Sergipe). Because of the widespread dissatisfaction expressed by many with agricultural credit, research, and extension, moreover, several cases of successful disseminations of improved varieties to small farmers were also identified--in order to explore why performance had been so different in these cases (Chapter 5).

9. The three categories of projects, components, and agencies did not hold up for long. (1) The better-performing agencies did not always stay that way (and mediocre agencies sometimes performed surprisingly well); (2) good performance was often bracketed in time by the term of office of a particularly supportive and demanding governor (e.g., 1982-1986 in Sergipe, and 1987-1989 in Bahia, Maranhão, and Pernambuco)--a subject treated in Chapter 2; (3) the high ratings given by many to infrastructure, health, and education sometimes said more about things other than impact or agency performance--e.g., the relative conspicuousness of the results (new roads vs. productivity-increasing seed varieties), or the relative easiness of the task (installing rural water systems vs. agricultural extension); or the fact that the project unit or other agencies had taken the tasks away from the infrastructure agencies because they had been performing inadequately--the subject of Chapter 2; and (4) though many observers rated health and education high on impact, these components got consistently low grades for agency performance in supervision reports.

10. To sum up, there were no projects, components, or agencies that could be said to have performed consistently well throughout the whole period under review, or consistently better than the others. People talked about episodes of good performance that had come and gone, as distinct from consistently "good" agencies, components, or projects. Trying to make sense of these puzzling ebbs and flows of performance led to the discovery that good performance often had less to do with the inherent capabilities of an agency itself than with a set of other factors--namely, (1) the ease and difficulty of tasks, (2) the presence of outside pressures, (3) built-in incentives to perform, and (4) the involvement of keenly interested actors and organizations at the local level. When one of these variables changed significantly, performance went from good to bad, or vice versa. Since project design and supervision tend to concentrate on improving the inherent capacity of agencies, this finding might seem to make the task of institution building even more difficult.

But it is often no more difficult to influence these variables than it is to improve, from the inside, the quality of what agencies do--sometimes it is even easier.

11. A few caveats on what this study does not do. As explained in footnote 1, the study does not discuss macro policy issues like overvaluation of exchange rates and other policies affecting agricultural exports, or subsidization of agricultural credit and other inputs. Second, it does not attempt to judge the strategy of the Brazilian government or the Bank for alleviating poverty in the Northeast. Third, it is not an evaluation of the Northeast projects, nor of integrated rural development in general.

#### Reinventing the projects (Chapter 2)

12. The better-performing activities departed consistently from their original design in five ways. (1) They were often implemented in less time than that allowed for at appraisal--the installation of wells and standpipes in rural communities, campaigns to widely distribute improved varieties of seed and rootstock and, in some cases, the acquisition of land for redistribution. This happened against a general background of delays in execution; which had actually caused the Bank to lengthen the execution period from five years in the first-generation projects to more than eight years in the second generation. The longer execution periods, though seemingly more appropriate for such difficult tasks of institution building, actually deprived the projects of certain pressures and incentives that were very much present in the environment of the good performers.

13. (2) The better-performing projects ended up being a much narrower version of what was envisioned at appraisal, with one or two components elevated to center stage. Particular favorites were rural water, community participation, and land-distribution activities. This "reinvention" could take place because (a) a supportive governor would choose one of the project's components as his "signature" activity; (b) project managers gravitated toward their own favorite

components; (c) shortfalls and delays in the transfer of counterpart funds--though a major problem throughout implementation--scrambled budgets enough to give project managers liberty to re-mold the projects to their liking and reduce them to more manageable proportions.

14. (3) The relative ease (or difficulty) of the tasks that the projects assigned to agencies influenced their ability to perform well. Water agencies found rural water supply to be easier than irrigation, for example, because water was less "analysis-intensive" and less dependent on outsiders beyond one's control--namely, other agencies and users. This explains why the design and installation of rural-water systems typically went better than irrigation, as well as why Sergipe's new rural water agency performed well in rural water and poorly, subsequently, in irrigation. Also, the goals and standards of the projects themselves made tasks more difficult or unsatisfying to some agencies--namely, the redirecting of public-sector services toward the poor, the desire to rely on less capital-using technologies for infrastructure and, partly a reflection of the latter, the concern about reducing unit costs and reaching larger numbers of people.

15. (4) When performance was good, project management had been subject to clearly identifiable outside "demand" pressures to get things done, reach significant numbers of people, reduce costs, or be accountable in other ways. These pressures came not only from beneficiaries, but from governors, other state agencies, development banks, municipal governments, nongovernment organizations, the World Bank. The arrival of such pressures on the scene helps explain why mediocre agencies sometimes produced surprising bursts of good performance; the lack or withdrawal of such pressures also helps explain why agencies already deemed strong suddenly performed poorly.

16. (5) Better-performing agencies routinely took over tasks from the agencies meant to carry them out. First, the excellent public managers who were attracted to the project-coordinating

units did not want to "merely" coordinate the work of other agencies, but wanted to "carry things out" themselves. Second, managers took over tasks out of frustration with footdragging or shoddy work by the designated executing agency; "takeover" gave them the control they desired over the pace, quality, and cost of project execution, and made their work less vulnerable to uncertainty and ill will. Third, powerful and supportive governors, impatient with "the lack of results" from the established agencies, sometimes helped give project managers the excuse and the wherewithal to take over from the other agencies.

17. How could agencies in an institutionally "underdeveloped" environment and with no experience at a task have simply taken over from the established agencies and done a reasonable job? First, they sometimes broke project rules and contracted out the work to public agencies other than the designated ones, or to private firms or nongovernment organizations; they succeeded best at getting other agencies to perform, in other words, not when they were "coordinating" these agencies but when they had the power to contract or force the agencies to do what was required. Second, when a project unit or other agency lavished its attention and scarce funding on the components it could manage better, this reduced the complexity and difficulty of the projects for them. Third, the takeover agencies liked the tasks that the established agencies disliked; this gave them and their staff the advantage of high motivation, which often turned out to be more important to good performance than long experience with an activity. Fourth, because public-sector professionals flowed back and forth between agencies, the takeover agencies could draw on the expertise of all professionals in the public sector--getting a specialist seconded to them, often from the taken-over agency itself. Indeed, creating a pool of such expertise in the public sector of the Northeast may be one of the most important contributions of the Northeast projects--not fully appreciated precisely because it is an externality and therefore not captured in the evaluation of any particular "unstable" agency.

18. The takeover phenomenon, and its association with better performance, throws some light on the issue of working with established agencies vs. creating new ones. Learning from past experience, the Bank and the Brazilians decided to work through established agencies in the Northeast projects--creating from scratch only a "modest" project-coordinating unit, which had no executive functions. But the takeover stories often showed good performance coming also from agencies not established or specialized in a particular activity, and not originally meant to carry out the component--as well as from dynamic managers not wanting to play "modest" coordinating roles. The importance of takeover also helps explain why there was so much dissatisfaction with agricultural extension, research, and credit: these components were simply more difficult to take over than the others. Finally, takeover was not always associated with good performance, and established agencies designated at appraisal did not always perform poorly. Rather, takeover and good performance were associated with each other in enough cases to draw one's attention and to require an explanation.

#### Mobilizing additional finance (Chapter 3)

19. Better-performing projects, or pieces of them, frequently elicited the mobilization of additional resources above and beyond what was expected at appraisal--by governors, agency managers, state secretaries, mayors, banks, or beneficiaries themselves. These resource-mobilizing initiatives merit close attention because they occurred at a time of extreme fiscal austerity in Brazil, when it was difficult enough to get the Brazilian government to come up with counterpart funding for the projects, let alone with unanticipated additional funding. Three examples of this resource mobilization follow.

20. (1) A state loan fund for works projects in municipalities resulted in a kind of informal municipal betterment levy in the form of land, materials, and fencing. (2) A Bank imposed ceiling on per-hectare costs for tubewell and riverine irrigation led to the unanticipated donation

of land for small-scale irrigation by municipalities and by private farmers in an innovative cost-sharing arrangement. (3) A healthy spread between the return paid by rural banks on deposits and what they earned on lending led to aggressive mobilization of deposits by rural banks and increased lending to small farmers. Interestingly, none of the incentives of these cases to mobilize additional resources were intentional, but there is no reason why they could not be.

21. A considerable part of these additional resources came through municipal governments. Yet they had no formal role in the Northeast projects because they are typically seen as bankrupt, clientelistic, and the technically inadequate which is often true. In each category of examples, some cases involved the Northeast projects, some involved other projects intermingled with the Northeast projects, and a few did not involve these projects at all, though the design features and place of implementation were quite similar. The way in which the municipalities were drawn into resource mobilization, moreover, transformed them into a source of healthy outside pressure on state agencies to behave accountably, get things carried out on time, keep costs down, and use less sophisticated and capital-intensive standards. Bank staff had tried, often to no avail, to accomplish the same thing.

22. Bank concern about resource mobilization has concentrated almost exclusively on securing the commitment of counterpart funding before projects begin, and in cajoling federal and state governments to come up with the promised funding during implementation. The additional resources mobilized in these cases were not committed beforehand: they resulted from a structure of incentives that made it worthwhile for institutions and individuals to contribute after things got going--and in a way that did not add to inflation or the fiscal deficit. Bank-sponsored and other research, moreover, has demonstrated that the mobilization of rural savings is critical for the development of strong rural financial institutions which, in turn, are critical for agricultural development itself. But the Bank's agricultural

and rural development projects have not linked the provision of credit to the mobilization of deposits, a linking that could also help to solve the problem of excessively subsidized interest rates.

#### The question of land (Chapter 4)

23. Some important lessons about land emerge from putting together (1) the above-noted cases of additional resource mobilization in land, (2) some aspects of agrarian reform and settlement in Bahia, Ceará, and Maranhão, and (3) a successful experience with cooperative land purchase and settlement in Sergipe. There was some variation across these cases in the characteristics of land tenure and the availability of land for expropriation or purchase. Nevertheless, some common themes ran across these disparate cases which pointed to an approach to land settlement that was cheaper, quicker, more decentralized, more reliant on settler participation, less adversarial than expropriation, and more economically viable.

24. First, land markets worked better for small farmers when local organizations (coops, labor unions, local government) and beneficiaries participated in the search for land, the decision to acquire it, and the settling of its price. Second, this more decentralized approach introduced some checks against collusion between large landowners and the state. Third, many cases of successful land transfer (and of successful agricultural development) took place at the edge of "internal frontiers" in already settled regions, where the market promised clear returns from the intensification of agriculture in small farmer crops--tomatoes in Ibiapaba, oranges in Sergipe, irrigated vegetables in the Irecê region of Bahia. This particular feature stands in contrast to the customary view that the increase in land values accompanying development and the intensification of land use makes land-transfer actions less possible. Fourth, opportunities for transfer in the more settled regions occurred in "patches" rather than the large blocks customarily envisioned by planners for settlement projects. Fifth, dedicated project managers were highly motivated to make land markets and other mechanisms work in a way

that would "produce" land parcels at low cost or none at all, because (a) expropriation of parcels under 500 hectares was not allowed by the law, leaving purchase or acquisition by donation as the only option available for acquiring smaller parcels, and (b) more project funding was available for infrastructure investments and agricultural services than for land acquisition (by expropriation or purchase). Sixth, small-scale private irrigation associated with high-value agricultural production was a notable feature of several of the cases reviewed.

25. The lessons of these cases suggest greater possibilities for land transfer to landless farmers than those conveyed in the 1990 World Development Report on poverty. They also have particular relevance for that report's new focus on "rural infrastructure" as a means to bring about equity-oriented rural development. In the most successful cases described above, that is, project agencies strictly linked the provision of roads and irrigation to the process of acquiring land and transferring it to small farmers. The Ibiapaba project was an exception: the project provided roads and electrification without securing the distribution of land, contributing to the inequality of landholdings becoming worse than it was before the project.

#### Research, extension, and agricultural development (Chapter 5)

26. During the episodes of successful dissemination of improved varieties, the nature of the task and the environment faced by the executing agencies was strikingly different from what they were doing during other times. The chronic inability of research and extension to collaborate disappeared; or coordination between extension and research turned out not to be necessary for adaptation and dissemination to occur. Many of these episodes originated in "campaigns" against crop disease and pests--the boll weevil in the cotton-producing states, orange disease in Sergipe, and banana-root fungus in Paraíba--and transformed the work environment of research and extension in the following ways:

27. (1) Attention was riveted on a single crop, or a single problem with that crop. (2) Results were clearly measurable, penalties for poor performance were high, and performance was judged in terms of outputs (e.g., reduced levels of pest incidence, number of diseased plants eradicated). (3) Powerful "demanders" were frequently on the scene, loudly clamoring for results--governors, directors of other agencies, mayors, farmer associations, and high-level officials who worried about the serious impact of possible crop loss on state tax revenues and on the region's agricultural economy. (4) The task had a clear beginning and end, usually within the four-year period of a governor's mandate and sometimes even within a one-year crop cycle--well within the five-to-eight year life, in other words, of the RD projects. (5) The intense public-sector effort mobilized around the crop in a particular region, and for a limited period of time, guaranteed the smooth supply of the improved inputs that was so problematic in more routine times; reducing input-supply uncertainties, in turn, made adoption more attractive to small farmers. (6) The agency itself felt energized, and instilled with a sense of mission, by having such a concrete and dramatic problem to work on, with potentially large and foreseeable results. (7) Local boosterism played an important role in driving many of these stories of agricultural dissemination and, more broadly, of microregional development. Though this list of traits might seem unique to disease and pest campaigns, various other episodes of good performance by extension and research turned out to have at least some of these same characteristics.

28. The traits named above contrast sharply with those under which extension and research customarily work. Typically, (1) performance is measured in terms of inputs--number of farmers visited, number of courses given, number of demonstration plots--as opposed to outputs like adoption rates of improved varieties or yield increases; (2) agencies work on a broad agenda of crops and activities, and for open-ended periods of time, with no urgency behind the introduction of any particular improved variety or practice; (3) frequently, neither the private nor the public sector

is able to provide the improved inputs smoothly, in a timely way, and at reasonable cost--thus reducing the returns to be had from their adoption. The disease campaigns and other episodes of better performance redefined the task of extension and research, in sum, in a way that made it possible to get good performance out of the same agencies that did not do well with a much broader agenda.

#### Conclusions and recommendations

29. Projects performed better when (1) agencies had more control over the quality and pace of project execution, which they acquired partly by carrying out tasks that other agencies were supposed to--or by contracting these out and supervising them; (2) project tasks were particularly "easy," or new agencies and units could "cut their teeth" on easy first tasks, or the project was changed in a way that made difficult tasks easier; (3) incentives were such that additional financing from government or beneficiaries was elicited during the course of implementation, and in a way that made for better-quality projects; (4) agencies were subject to pressures from the outside to be accountable, particularly pressures from "demanders"; and (5) there was an unusually complementary combination of action by state and local government--the local involvement helping to reduce costs and delay, make state agencies more accountable, and elicit the greater use of local materials and labor.

30. Though the importance of demand pressures in inducing good performance is not a new finding, the Bank and other donors customarily take a "supply-side" approach to project design--dedicating themselves mainly to building up the capacity of particular agencies. Though the realm of demand might seem beyond the reach of project officers, the experience reviewed provides numerous examples of how agencies could be subjected to these kinds of demand pressures. Two particular suggestions are:

31. (1) "Good" governors and other elected leaders could be attracted to support projects more by breaking up planning-and-execution periods

into four-year cycles that coincide with the election cycle. These leaders could be allowed to pick and choose from a "menu" of possible activities that the Bank would support--which is what many governors did anyway, in backing only the components they liked best and sometimes raising additional funding for them. There should be enough flexibility for one state to choose rural water and another small-farmer credit--just as the Sergipe governor and the Pernambuco governor, respectively, did. This contrasts with current project design, in which the many components and the long execution periods cause elected leaders to lose interest, or use project resources simply to meet short-term budget needs or pay off political debts.

32. (2) Executing agencies should be subjected to demand "shocks" by channeling a part of their funding through the "users" of their services--not just beneficiary groups, but other public agencies, development banks, municipal governments. Just as the takeover managers contracted out what they could not do themselves or get the executing agencies to do, the demanders would "contract" the supplier agencies for their services. Funding supplier agencies through users would also bring to the project environment the traits of the successful cases: narrowly specified tasks, measurable and conspicuous standards for performance, and clear penalties for not performing.

33. Activities should be chosen for funding and assigned to particular agencies partly in accordance with their relative ease and difficulty. Some examples of possible "easier" tasks--at least to start out--are campaigns to combat epidemics of crop disease and pests, installation of simple rural water systems, and some forms of land acquisition. Given the new interest in rural infrastructure, moreover, it must be recognized that established infrastructure agencies often do quite poorly at tasks assigned to them by Bank projects of this nature; other agencies, with less experience or specialized expertise, often do better. This suggests that such activities should sometimes be placed outside their traditional bureaucratic homes, perhaps only temporarily, in "inappropriate"

agencies or even new units--if these units are more motivated by sympathy and outside pressures to do well.

34. With respect to the lessons to be drawn from the takeover experience in general, (1) a single agency should be given sole power over a project, whether the tasks are few or many, whether that agency is an established one or new, or whether it is an executing agency or a coordinating unit; and (2) that single agency should be given the political and financial wherewithal to carry out the project's tasks itself or contract them out--to other public agencies, private firms, or nongovernment organizations. The lesson of the takeover experience, in other words, is not that (1) the Bank should go back to creating new and powerful parastatals; nor (2) that project units (as opposed to other agencies) should necessarily be given the power to carry things out themselves; nor (3) that the number of tasks should simply be reduced--though that wouldn't be a bad start.

35. Based on the findings stated above, the operational conclusions for research and extension are fairly clear. (1) Projects should favor single-crop or other highly-focused interventions, with a clear beginning and end, and that tend to have results measurable in terms of output. Though the broad-palette type of support currently provided is more consistent with the recent emphasis on farming-systems research, it is also organizationally burdensome; this kind of support is more appropriate in projects dedicated to building up a single agency over a long period of time--like the Bank's successful support to Brazil's agricultural-research parastatal, EMBRAPA, over many years. (2) Projects should fund research and extension at least partly through "demanders" because they place a higher value on applied work and dissemination than research agencies do. (3) Projects should fund research centers to more widely disseminate one or two of their favorite successes.

36. More generally, the Bank should (1) take more of an "urban" approach to its rural projects--as in its "intermediate-cities" projects in Brazil and elsewhere--resorting to matching funds and other

incentives as a way of (a) tapping into the resources and developmental entrepreneurship available at the local level, and (b) placing certain functions at a level where they work better; (2) pay more attention to linking small-farmer lending to the mobilization of rural savings, which may require projects focused exclusively on rural financial institutions and not therefore embedded in agricultural-development projects; and (3) act on the myriad possibilities for mediating the transfer of land to small farmers for productive agriculture in a more decentralized way, particularly in conjunction with the provision of roads and irrigation water.

37. Suggestions for Third Generation Projects. Though a number of successful components or episodes have been identified in this study, they have all, in some sense, been unique. They have depended on a number of energizing factors such as good state level political support, a clearly defined and urgent problem, empowerment of beneficiaries, mobilization of additional resources, etc. Being able to explain these good performances does not, unfortunately, mean that they can be repeated with a high probability of success. Rather project design should reflect that rural development, in the Northeast at least, is still in an experimental phase (which counsels against any large scale initiatives until the reliability of success has been improved). Wherever possible, identified positive predisposing factors should be incorporated into project design. The following paragraphs discuss such factors.

38. A single project unit should have responsibility for the project as a whole, and should enjoy a contractual relationship with implementing agencies.

39. Beneficiary organizations (municipios, labor unions, cooperatives, village organizations, etc.) should be involved by the project unit to the greatest extent possible in the design of the investments; to improve the design, to provide a further stimulus to good performance by the implementing agencies, and to mobilize additional resources.

40. The project should distinguish between those interventions which are suitable for decentralized management, and other activities where economies of scale dictate provision on a regional or state-wide basis.

41. Land reform is likely to perform best where (1) it can take advantage of new technology (the internal frontier), (2) infrastructure investments (e.g. roads and water) follow acquisition of the land, (3) beneficiary groups contribute to identification of suitable land, and (4) land is purchased, but under duress (e.g. where there is a credible threat of expropriation). Direct expropriation tends to be (a) restricted to one or a few agencies, (b) hedged around with size or other limitations, (c) often involving cumbersome review processes within the expropriating agency, and (d) in any case liable to legal challenge and delay. As in all these brief generalizations exceptions, which tend to prove the rule, can be found. Such exceptions are often cited in the main text.

42. Physical and social infrastructure can be used to deliver benefits to the very poor and landless, who might otherwise be excluded from a production-oriented program. Education and preventative health services may be used to facilitate emigration by the landless. For this reason roads, water, education and health were amongst the most fondly remembered interventions from the first generation projects.

43. Existing organizations which previous to the PAPP program have not provided services to the rural poor may or may not be able to adapt to the program philosophy or schedule. Careful appraisal and monitoring of their performance is required, with the right to cancel contracts in the face of poor performance. In some cases hardware design may be the crucial determinant of investment sustainability, in others it may be community organization. Depending whether technical or social skills are most needed the appropriate implementing agency would differ markedly.

44. A highly inflationary environment is not conducive to successful credit schemes. Pending better performance, credit components should be small and experimental (if included at all). There is probably a greater need for the poor to be able to preserve the real value of their savings, than to be able to borrow. If grants are included they should serve a clear purpose, and not simply be tied to the disbursement of credit.

45. Projects should be designed to be able to respond to the Governor's priorities. This is not to finance any scheme proposed by the Governor,

but rather to be able to switch resources when a Governor's priorities promise real and sustainable improvements for rural families.

46. Finally, though explicitly excluded from the micro component perspective of the present study, the macro-economic and political context of any new projects should be properly appraised. For example, with an abundant supply of cheap labor the Northeast is particularly vulnerable to an over-valued exchange rate. Also the poor find it particularly hard to save, when money is not a reliable store of value.

/1 In commenting on a draft of this report, the Secretariat for Regional Development of the Office of the President emphasized that this report does not follow the usual approach used by the World Bank in analyzing Bank-financed projects. As explained in the text this study is, intentionally not an evaluation of the Northeast projects, but has viewed them with a particular question in mind and a concern for arriving at conclusions of general utility outside RD and outside the Bank. The Secretariat would have also liked to see a fuller treatment of various issues (the economic, political, social and cultural context of the region and the country; the relationship of the takeover discussion to issues of management and of the allocation of resources among components; the relationship of good performance to different social groups like landowners, squatters, sharecroppers, tenant farmers; the relationship of the single-crop successes to issues of market distribution, information on which project did well in terms of spending a lower percentage of project tasks on administration). We could not be more in agreement that these subjects merit a much fuller treatment, but were not able to do so because of constraints on time, financial resources, and length of the final report. We agree that these are issues of importance, and would endorse the need for further evaluation work, as the Secretariat suggests, on the joint World Bank and Government of Brazil projects in the Northeast. The Secretariat would also have liked to see an investigation of the components where inter-agency coordinating did not work well. We have not, indeed, analyzed poorly performing components in detail in this report, partly because we have done so more generally in other evaluation studies, particularly OED's 1988 report on (world-wide) experience with RD. More to the Secretariat's point, this report does describe what worked well in the context of the most frequent types of failures—e.g., to deliver credit on time for planting, of extension and research to collaborate, of projects or components to be carried out on time. A number of OED prepared PPARs have discussed the problems of individual projects. This work is no substitute for an evaluation of the portfolio of projects, or a study of Northeast Brazil, rather it uses the unusually large sample of related projects to provide pointers to the Bank and development economists generally on effective project design for delivery of assistance to the rural poor. For the full text of the Government's comments see Annex 1.

/2 Alagoas, Bahia, Ceará, Maranhão, Pará, Pernambuco, Piauí, Rio Grande do Norte, Sergipe, and Minas Gerais. See note 3 to para. 1.07, for an explanation of why the non-Northeast State of Minas Gerais was included in these "Northeast" projects.

/3 The Region notes that the "second generation" of projects is currently being reformulated. It is expected that the new strategy will be ready for presentation to the Board in early 1992. The lessons distilled in this report have been drawn from the first and second generation projects, as originally implemented. The Region has also commented that "the implementation of the 'second generation' is only, at best, at the midpoint and has been very distorted by financing problems, conclusions reached drawing on experience from that generation are largely unrelated to the project design."

/4 Apoio para Pequenas Comunidades Rurais (Support to Small Rural Communities).

## DYNAMICS OF RURAL DEVELOPMENT IN NORTHEAST BRAZIL: NEW LESSONS FROM OLD PROJECTS

### I. INTRODUCTION

1.01 In 1974, as part of a wider program targeted at poverty reduction in general, the Bank announced a bold new approach to reducing rural poverty and stimulating agricultural growth. Born out of dissatisfaction with the inability of past development efforts to reduce rural poverty and inequality, the "new style" rural development (RD) projects differed from, and supplemented, previous interventions in two ways. They targeted the poor directly with agricultural production services and subsidies. And they provided certain regions with a complete array of development investments, ranging from roads to agricultural credit to health--regions chosen for their agricultural potential and high concentration of small farmers. By 1986, twelve years later and after US\$19.1 billion (current) of Bank commitments to RD worldwide, of which US\$6.3 billion has been for "new style" area development projects, the new approach had fallen into disfavor. Myriad problems had plagued the implementation of the projects, and serious questions had been raised about their effectiveness at reducing poverty and increasing agricultural productivity. These concerns, outlined below, were laid out in a major review of the RD experience carried out by OED in 1987.<sup>1/</sup>

1.02 Though targeted rural development deserved much of the criticism it received, some of these projects--or parts of them--performed well. Though these exceptions in themselves do not justify bringing this kind of RD project back in, they raise the question as to how some projects could have worked well with a design and in an environment now considered not conducive to good performance. More constructively, if certain projects or activities could stand the test of such adverse circumstances, they certainly must have some lessons to offer about improving the design of programs today. Though the Bank has largely abandoned the RD approach, it continues to devote major policy attention and resources to the same sectors, individually or in pairs, that were all linked together in RD projects--agricultural research and extension, rural finance, irrigation, farm-to-market roads, drinking water, health, education.

1.03 Because past evaluations of the RD experience have been more illuminating about the causes of failure than about the causes of success--as the above-noted OED review itself pointed out--they have thrown more light on what not to do than on what to do. This study seeks to do the opposite. It identifies patterns that ran across a variety of instances of better performance in a set of 23 RD projects in Northeast Brazil totaling US\$3.3 billion (current). The Brazilian government financed 48% of this investment, and the Bank 42% (US\$1.4 billion)--one of the Bank's most comprehensive RD programs (Table 6). The study asks what lessons these patterns reveal about project design and, more generally, about the role of the public sector in rural development. As the reader will see, the answers to this question do not add up to a case in favor of or against "integrated rural development," but are of relevance to a wide variety of more narrowly-conceived projects and sectors in which the Bank operates today.

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<sup>1/</sup> WB (10/16/87). Bank documents without named authors are cited in References under "WB," and chronologically by date; authored Bank papers are cited alphabetically by author together with all other references.

### The experience with integrated rural development

1.04 The Bank's "new-style" RD projects were a direct result of President McNamara's concern about rural poverty and income inequality, as expressed in his Nairobi speech of September 1973. They represented a break from the past in that they (1) targeted small farmers; (2) "integrated" several interventions in one project, instead of focusing on just one or a few sectors or activities or crops--including a variety of agricultural production services (credit, extension, research, marketing, seed production, input production and/or supply, micro-enterprise assistance), physical infrastructure (roads, irrigation, drinking water, rural electrification), social infrastructure (education and health), and sometimes, as in the Northeast projects, land interventions; (3) they were built on a concept of "area development"--with project areas being chosen for their concentrations of small farmers and their potential for agricultural development. Only by targeting small farmers and the poor in general, it was felt, could the bias of public-sector institutions toward the better-off farmers be reversed, as well as the tendency for income and landholding distributions to remain skewed, regardless of the robustness of growth.

1.05 Dissatisfaction with the RD projects, as expressed in various evaluation studies carried out by the Bank and other donors, focused on the following problems. The projects were (1) too complex, because of the large number of components and of executing agencies required to carry them out, and the need for them to coordinate with each other; (2) not small or flexible enough to allow the experimentation necessary for such a new approach; (3) granted excessive subsidies for agricultural inputs, particularly credit; (4) assumed incorrectly that a "technical package" for small-farm agriculture existed, that it could increase productivity substantially, and that the infrastructure necessary to deliver the productivity-increasing inputs would fall smoothly into place under the project; (5) suffered from the lack of beneficiary participation in design and implementation, with the result that farmers often did not adopt or have access to project services. In addition, (6) increases in agricultural output in project areas often could not be documented, and when they were, they often reflected more an increase in the area cultivated with traditional techniques than increased yields; and (7) the projects faced an uphill battle in trying to increase agricultural production and productivity in a policy environment that usually penalized agriculture--mainly in the form of overvalued exchange rates that reduced the returns to agricultural exports, tariff protection that increased the costs of agricultural inputs, and administered prices for farm produce below market levels.

1.06 The Bank has reacted to these problems in various ways. First, it is placing more emphasis on policy reform in the agricultural sector, as opposed to projects. Second, the concern about poverty has shifted from agricultural-production projects to investments now believed to be more effective at reaching the poor--namely, (a) investments in the "social sectors"--mainly education and health, (b) employment generating projects, (c) transfer expenditures, and (d) macro policy approaches to reducing the burden of structural adjustment on the poor. Third, project lending in agriculture has been retreating to the more "modest" approach of the pre-RD period--focusing on agriculture only and involving fewer agencies and components. Fourth, particular attention is now being paid to "rural infrastructure" as distinct from agricultural production services, given the association found in recent studies between infrastructure investments and the kind of agricultural growth that reduces income inequality between regions, at least, if not within.<sup>2/</sup>

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2/ E.g., WB (1990a), Ahmed & Hossain (1988), Barnes & Binswanger (1986), Binswanger *et al* (1989).

### Northeast Brazil

1.07 The RD projects in the nine states of Northeast Brazil are particularly suited for an analysis of patterns running across several projects.<sup>3/</sup> They are embedded in the same culture, language, politics, and policy environment, and they are confined to a region that is itself fairly homogeneous with respect to the rest of Brazil. As a whole, the region has a long history of persistent backwardness, and a strong sense of regional separateness (like the United States' South). In other ways, the region displays considerable variation. Forty percent of its rural population lives in a semi-arid region (the sertão) of poor soils and subject to periodic drought--in contrast to distinct microclimates that are more humid and have better soils--such as higher tablelands, hilltops, and damp valleys. The Northeast-project areas contained this diversity--from humid to arid and from good soils to poor--except for the exclusion of the humid coastal region (para. 1.12).

1.08 With its inception in the mid-1970s, the Northeast program has a 15-year history that is longer than that available to most evaluators, as well as representing a major commitment by the Brazilian government and the Bank. The program also includes the incorporating of learning from a "first generation" of projects designed in the mid- and late-1970s, into a second generation designed in the mid-1980s. Among Bank RD projects, moreover, the performance of the Northeast projects was not unusually good or bad; rates of return for four of the projects ranged from 8% to 13% (Table 9A)--roughly the same as the average of 10% for the 192 rural development projects reviewed by the Bank in 1987 (WB 10/16/87:37). Though the Brazilian Northeast has its own peculiarities, finally, the problems encountered by the projects were quite similar to those that characterized RD projects worldwide.<sup>4/</sup>

1.09 Politics and the attempts to alleviate poverty in the Northeast have been influenced in many ways by the periodic natural disasters that afflict the semi-arid region--droughts and, to a lesser extent, excessive rains. The last drought extended for five years of the implementation period of the first-generation projects (1979-1983); floods followed in 1984 and another drought in 1987. To combat the effects of the 1979-1983 drought, the central government spent emergency funds amounting to more than three times the expenditures on the Bank-funded projects during the same

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3/ The states are Alagoas, Bahia, Ceará, Maranhão, Pará, Pernambuco, Piauí, Rio Grande do Norte, Sergipe, and Minas Gerais. The state of Minas Gerais is not part of the Northeast, though contiguous with it and including a drought-prone area that belongs to the Northeast "drought polygon." Minas belongs politically and economically to the much more developed center-south of Brazil, and does not identify regionally with the Northeast. For this reason, the Minas projects were not visited for this study, although many of Minas' drought polygon problems are similar to those of the Northeast. The Minas projects, however, are considered an integral part of the PAPP and POLONORESTE program and are therefore included in the tables referring to the projects, but not to regional indicators.

4/ For a comprehensive review of the problems and achievements of the first-generation projects, see WB (1983).

period.<sup>5/</sup> Though it may seem remarkable that anything at all was accomplished with this kind of adversity, these kinds of natural disasters, and the vulnerability of the poor to them, are characteristic of the environment facing public-sector institutions in many of the poor regions of the world.

1.10 Northeast Brazil has 41.4 million inhabitants (29% of the Brazilian total), and a land area of 1.5 million square kilometers (18% of the total). The size of the nine states varies greatly, with the population of the largest, Bahia, being eight times larger than that of the smallest, Sergipe (Table 3). Rural population densities average 13 persons per km<sup>2</sup> (Table 10). The Northeast is one of the poorest regions of the world, with 44% of its total population living below absolute poverty and 60% of its rural population (Table 2). Though the region has 28% of Brazil's population, it has almost double that share (56%) of the country's poor. The average monthly income of Northeast families is roughly half that of the rest of the country (2.61 minimum wages *vs.* 4.83 for Brazil), a relationship that has not improved since 1970 (Table 2). Mean monthly income of the employed labor force in rural areas is only 62% that of Brazil, a difference that has worsened since 1970. With respect to land in farms, the bottom 53% of farms (0 to 20 hectares) account for 6% of total farm area, and the top 15% of farms (above 100 hectares) for 75% of farm area. (These last measures are no worse than those for all Brazil.) Only 6% of rural Northeast households have piped water (compared to 27% for all of rural Brazil) and only 22% have at least a basic sanitary facility like latrines (47% for all of rural Brazil); only 34% of households (rural and urban) have electricity, compared to 60% for Brazil (Table 1).

1.11 Indicative of these difficult conditions, the rate of regional net emigration from the Northeast is the highest for Brazil--20% in comparison to 16% for Brazil; the rate of net in-migration is the lowest--7% and 15% for Brazil.<sup>6/</sup> Though much attention has focused on migration out of the rural Northeast as a sign of its poverty, rural-urban migration rates are no higher than those for the highly developed and agricultural southern region of Brazil. Finally, whereas the absolute number of rural inhabitants in all other regions of Brazil declined for the first time during the 1970-1980 period (by 6%), the Northeast was the only region in which the rural population still grew (by 5%). With Brazil's population now 70% urban, the Northeast's is 50% urban, though its urban population has been increasing as rapidly as that of the rest of the country.

1.12 Though some of the most conspicuous aspects of the history of Northeast public interventions in the countryside relate to emergency responses to the drought, 60% of the region's rural population lives outside the drought area--in the humid coastal zone (zona da mata) and the agreste, the ecologically diverse area between the humid coast and the semi-arid backlands. The agriculture and politics of the humid zone, where one third of the region's population lives and six of its nine capital cities lie, have been dominated by sugar (and in southern Bahia, cacao) for more than

5/ From 1983 SUDENE data cited in Livingstone & Assunção (1987:120, T. 12.1). For treatments of the drought and public policy in the Northeast, see Hall (1978), Hirschman (1963), Livingstone & Assunção (1987, 1989), Magalhães (1989).

6/ Moura & Santos (1986). Net emigration is the total number of those born in a region and living outside, divided by the total number currently in the region; net in-migration is the opposite. For other works on Northeast migration, see Carvalho & Wood (1978), Martine (1979), and Moura (1982). For treatments of Brazilian and Northeast poverty, see Fox & Morley (1990), Denslow & Tyler (1984), Hoffman (1986), Hoffman & Kayegama (1984), and Thomas (1987).

a century. Partly for this reason, the Bank-funded projects are located outside this area, in the semi-arid and agreste zones.

1.13 The economic life of the semi-arid zone (rainfall averaging 700 mm) revolves around extensive livestock grazing by larger farmers and the growing of food crops by their tenants or by small-farm owners--corn, upland rice, beans, and cassava (the latter doing better with low moisture than the others). The single most important cash crop of the semi-arid zone until recently has been cotton--a drought-resistant long-fiber perennial variety jointly produced with extensive livestock and interplanted with annual food crops by sharecroppers. More recently, cashew has been growing in importance, including among small farmers, though its share in total Northeast agricultural output is still not significant. In addition to the food crops produced in the semi-arid zone, the transitional zone of the agreste also produces fruits and vegetables in some places, depending on the availability of rainfall, good soils, and river water for irrigation. This is also true of certain highland areas in the semi-arid zone itself.

### The projects

1.14 Since 1975, the Brazilian government has committed US\$3.3 billion (current) for lending to targeted rural development in the Northeast, for which it borrowed US\$1.4 billion (42%) from the Bank (Table 6). This package included (1) ten first-generation projects (POLONORDESTE) in nine states (including three follow-on projects in the states of Ceará, Bahia, and Minas Gerais) approved over the 1975-1983 period, and (2) nine second-generation projects (PAPP) in the same states and a first project in the state of Alagoas, approved over the 1985-1987 period, and a regionwide land project (US\$250 million).<sup>7/</sup> Total appraised cost was US\$1.3 billion for the first-generation projects, and US\$2.0 billion for the second. Bank loans accounted for 35% of total costs in the first-generation projects and 48% in the second. Though the second-generation projects were larger than the first, they were spread more thinly. The average number of beneficiary households per project and the average size of the project area more than doubled--from 23,000 direct-beneficiary households per project to 58,000, and from 42,000 km<sup>2</sup> to 103,000 km<sup>2</sup> (Table 6).

1.15 The first-generation projects included roughly a dozen different kinds of components--ranging from agricultural credit and extension through feeder roads and electrification to health and education, though any one project would not include all of them. The staples of each project were credit (23%), land-related activities (16%), feeder roads (20%), and agricultural extension (14%)--accounting for 72% of appraised costs (Table 8A). In an attempt to reduce the complexity of the projects and focus more exclusively on agricultural production, a second generation of projects eliminated health, education, and roads--as well as some smaller components (micro-enterprise credit, electrification, marketing). Credit (30%), extension (24%), and a new community-participation component (16%) accounted for 70% of appraised expenditures; associated land-related activities were unified in the separate regionwide land-tenure project (an additional 16%).

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<sup>7/</sup> POLONORDESTE is Programa de Desenvolvimento de Áreas Integradas do Nordeste (Program of Integrated Development for the Northeast), and PAPP is Programa de Apoio para o Pequeno Produtor (Program of Assistance to the Small Farmer).

1.16 Typical project organization involved the Bank and several levels of the Brazilian government--the federal government ministries, the Northeast regional development authority, semi-official banks, and the state-level project units and executing agencies. The project-coordinating units, set up in state departments of planning or agriculture, were in charge of designing the projects and supervising their implementation, but had neither executing responsibilities nor the formal power to grant funds or withhold them from the executing agencies--a subject treated in Chapter 2; an exception was the community-participation component (APCR)8/ in the second-generation projects, described momentarily, in which the project units shared formal implementation responsibilities with rural labor unions and some farmer cooperatives. Municipal governments, though often represented on ad hoc councils that vetted the APCR sub-projects, had no formal place in the projects as such, but sometimes ended up making important contributions that were not anticipated (Chapters 2 & 3).

1.17 The community-participation component, at US\$222 million and 16% of total second-generation costs, represented the most significant attempt of the Bank to make the implementation of its RD projects more participatory. The APCR fund, with the assistance of an average of 36 community agents and supervisory staff per state (Table 8B), makes grants of up to US\$10,000 to associations formed in communities of less than 5,000 inhabitants: (1) 65% for community-owned ventures like grain-milling facilities, seed banks, input-supply stores, and storage facilities, (2) 20% for small works projects (road repair, community laundries, public toilets), and (3) 15% for institution-building in community organizations, used mainly by the rural labor federations for training. A regional development commission, which meets several times a year to discuss implementation issues and approve the annual operating plans of the project units, also represents a major participatory innovation in that a third of the commission's representatives come from the state rural labor-union federations--a first in Brazil. (Another third are project-unit directors, and another third represent various federal ministries.)

1.18 By late 1988, disbursements under the first-generation projects were completed, but approximately 40% of total loan value and of total project costs remained undisbursed (Table 9). This was due to problems of increasing inflation and fiscal crises, delays and shortfalls in the transfer of counterpart funding by the central government to the states, and cutbacks in public-sector personnel. Implementation therefore took longer than expected--up to nine years, as opposed to the expected five years. By the end of 1988, about 10% of the second-generation loans were disbursed, representing approximately half of the disbursements expected by that date at appraisal.

### Methodology

1.19 Research for this study was carried out over the period of a year (1988-1989)--including two weeks at Bank headquarters in Washington, D.C., three five-week field stays in the Northeast by the author, and a year in residency there by a research assistant involved in follow-up interviews. In addition to time spent in Brasilia (one week) and Recife (two weeks), where the Bank has an office and where the Northeast Regional Development Authority (SUDENE) is headquartered, five of the nine project sites were chosen for visits of two weeks apiece, and for the following reasons:

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8/ Apoio para Pequenas Comunidades Rurais (Support to Small Rural Communities).

1.20 (1) Sergipe, site of the POLONORDESTE project in the Tabuleiros Sul region, was considered one of the two most successful projects in terms of agricultural development (oranges, passion fruit, cassava), and to have one of the most competent project-coordinating units; (2) the Ibiapaba highlands of Ceará, the site of the first POLONORDESTE project in the state, was the other "successful" case of agricultural development (tomatoes); (3) Bahia had been more recently successful under the PAPP project (along with Ceará and Maranhão) in carrying out a large program of expropriation (roughly 300,000 hectares apiece) and settlement of landless and near-landless farmers, and in carrying out a small-irrigation program for landless farmers in the Irecê region (vegetables); (4) Piauí, where the program of land transfer carried out through the purchase of 200,000 hectares under the POLONORDESTE project is now considered to be a "model" of successful land transfer by the Bank (WB 1990a:65); and (5) Pernambuco, recently the most successful state in getting credit to small farmers, and where the project unit--until recently mediocre--has been carrying out innovative work with highly focused interventions in small-farm agriculture.

1.21 Also useful were a series of case studies prepared for EDI on certain aspects of the Pernambuco and Bahia projects: (1) the program of small irrigation in the Irecê region of Bahia, and the decision of the project unit to take the component away from the state irrigation and extension agencies and hand it over instead to the local coop; and (2) the Pernambuco project unit's interventions in small-farm agriculture, financed partly out of funds meant originally for the community-participation component. Beteta also prepared two case studies for EDI on (1) the pros and cons of creating a new rural water agency in Sergipe (COHIDRO) vs. working with the existing water agency, and (2) hard choices made in the implementation of the agrarian-reform projects in Bahia. Because the decisions around all these changes were difficult and provoked controversy, EDI chose them as good material for a forthcoming volume of case studies for teaching (Batt 1990a, 1990b; Beteta 1990a, 1990b).

1.22 Through extensive interviewing of Bank staff and review of project files, I initially identified various instances of better performance, together with the nature of the problems against which these cases stood out. Though this initial investigation led to the choice of the five above-mentioned projects to be looked into carefully, the process of identifying "what worked best" continued throughout the course of the research, and set the stage for the questions asked subsequently in all interviews. Each time someone named a project or a component as working well, I asked a series of linked questions as to how the better-performing agency or component had been able to get around the problems that typically afflicted these and other RD projects--shortfalls and delays in the receipt of budgeted funds, foot-dragging by the executing agencies or inappropriateness in their approaches, the inability of extension and research to coordinate their activities, meddling by politicians and other influential persons, lack of sympathy of branch-bank managers for lending to small farmers, the difficulty of getting the results of agricultural research widely disseminated, the dependence of agencies on other uncooperative agencies to coordinate their work. I posed the question about "what worked best" as much to field staff on the ground in project areas, and beneficiaries, as to Brazilian and Bank officials familiar with all of the projects.

1.23 Defining "success" or, more accurately, "better performance," turned out to be more difficult than originally expected. Originally, I assumed that particular agencies, projects, or project components would be found to have worked consistently "better." Interim results, however, required some re-thinking:

1.24 (1) People talked about episodes of good performance that had come and gone, as distinct from consistently "good" agencies, components, or projects. This raised further questions about how a seemingly good agency could suddenly turn "bad," or how a chronically weak agency could suddenly produce a burst of good performance.

1.25 (2) When people had nothing good to say about the Bank-funded projects, they were asked if they could identify any similar interventions that had worked better, and why; their responses usually involved the same agencies and sometimes even the same persons that carried out the Bank-funded projects.

1.26 (3) A similar category of cases resulted from questions asked of farmers and research and extension agencies about "the most widely disseminated" research result they had seen--that which had had the greatest effect on small-farmer productivity and agriculture in the region.

1.27 (4) Bank staff and Brazilians often attributed the successful agricultural development associated with the Ibiapaba and Tabuleiros Sul projects to a dynamic that had started before the projects. (Two similar cases, less frequently cited, were the expansion of bananas under the Brejo project in Paraíba, and of vegetable farming in the Agreste Setentrional project in Pernambuco.) These interpretations led to an exploration of the period prior to the project to find out what was driving the earlier phase of agricultural dynamism, the nature of public-sector action in that prior period, and the direction given subsequently to that development by the project. Many interpreted these prior periods of growth as meaning that the project could not take credit for what happened because it was "so easy." But this interpretation begged the question of what was the best way for projects to identify and link up to such "easy" expansions in progress, and of whether such areas are a better choice for the siting of projects (Chapter 4).

1.28 The cases of better performance, in sum, fell into the following categories: (1) particular projects and (2) particular components--both often bracketed within particular episodes of time; (3) public-sector interventions similar to those of the projects but not funded by them--though often overlapping with them; and (4) public actions in areas that were growing successfully before the Bank-funded project started. Unfortunately, little data were available on the economic and social impacts of the Northeast projects. Yield data were generally not available for project-assisted farmers vs. non-project farmers, or for the project area vs. the non-project areas, or for before the project vs. after. With respect to impact, then, it was difficult to form an impression of what had worked and what hadn't that was independent of the qualitative reports from interviews, Bank supervision reports, and other studies. Though this represents a less than ideal basis for judgment, there was nevertheless a surprising consistency in the reports of those interviewed about what was working and what was not.

1.29 Care had to be taken in interpreting exactly what the consistently "good grades" given to some projects and some types of components meant. Sometimes they reflected more on implementation than on impact--mainly, the activity got carried out as planned and on time, or even before schedule. But this in itself represents a considerable accomplishment, given that many such projects often got carried out poorly or not at all. Conversely, people sometimes ranked certain interventions highly on impact that had not been carried out well or sustained, at least according to supervision reports--health and education were prime examples. This was surprising also because health and education had been such small components--5% and 4% respectively; and they had been

excluded from the second-generation projects partly because their "poor" performance caused the Bank to decide that these sectors should be treated in separate sectoral projects. (For various reasons, the latter never materialized.)

1.30 Separating out good impact from other things often proved difficult. Many said that roads, electrification, and drinking water had, like health and education, a much "higher impact" than the agricultural production services that were the centerpiece of both sets of projects. This was surprising because these particular infrastructure investments were minor in the first-generation projects--except for roads (20%)--and had been eliminated almost completely from the second. Later in the 1970s, moreover, some critics of the targeted projects had considered rural-infrastructure components inappropriate because (1) elites seemed to benefit more than proportionally, (2) tenant farmers were often evicted as a result of increased land values following the infrastructure investments, and (3) investments in roads and electrification in particular were already well-funded because of the strong support they elicited from politicians and influential private contractors. When the second-generation projects were being negotiated, finally, the Brazilian central government turned down a Bank request to include funds for spot improvements and maintenance of roads because it (the central government) did not want to fund expenditures that it saw as falling solely within the responsibility of states and municipalities. For all these reasons, the second-generation projects excluded rural infrastructure--except for some irrigation (8%) and water supply (2%).<sup>9/</sup>

1.31 It is tempting to interpret the "nostalgia" of the Northeasterners for the infrastructure investments of the earlier projects as confirming the "new wisdom" about the importance of rural infrastructure to equitable rural development. But the high rankings given to infrastructure were caused, in part, by factors other than impact--like the greater conspicuousness of these investments, and their political popularity and public goodness. In some ways, moreover, these comparative rankings revealed more about the greater difficulty of carrying out the agricultural components in comparison to infrastructure, than about their relative impacts. Also, data generated by Bank evaluations of the projects were not sufficient for forming a judgment about relative impact.

1.32 A few caveats on what this study does not do. First, it does not analyze macro policy issues like overvaluation of exchange rates and other policies affecting relative prices of agricultural output, or subsidization of agricultural credit and other inputs.<sup>10/</sup> Second, it does not attempt to judge the strategy of the Brazilian government, or the Bank, toward reducing poverty in Northeast Brazil.<sup>11/</sup> Third, though the study makes some critical judgments about the Bank--to the extent

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9/ Tables 8A & 8C. For an explanation of the special case of drinking water in the second-generation projects, see note 17 to para. 2.26. For drinking-water-expenditures in the first-generation projects, see note 50 to para. 2.92.

10/ For a view on macro policy distortions, see Krueger *et al* (1988 and forthcoming), and the Brazil country study by Angus Maddison; for a political-economic explanation of these policies across less-developed and developed countries, see Lindert (1990); for discussions of the performance of Brazilian agriculture, see Dias (1988), Graham *et al* (1987), Homem de Melo (1983, 1987), Rezende (1987, 1988, 1989), and WB (5/18/89). For credit issues in Brazil, see Anderson (1990) and references cited therein.

11/ For discussions of Northeast agriculture, see Homem de Melo & Canton (1980), Johnson (1971), Katzman (1984), Kutcher & Scandizzo (1981), May (1986), and WB (5/18/89).

that its programs diverge from some of the patterns found to run across the cases of better performance--it is not a general evaluation of the Northeast projects or of RD worldwide.

1.33 The review is organized in the following form. Chapter 2 analyzes the common traits of the better-performing agencies or episodes, across various types of components and activities. Chapter 3 discusses cases in which additional resources were mobilized that were unanticipated at appraisal, and in a way that made the projects work better--in rural infrastructure projects, and in credit. Chapter 4 presents another set of such cases in the area of land transfer. The cases of Chapters 3 and 4 are discussed in terms of the incentives they provided for resource mobilization and better performance, as well as their lessons about how to improve performance in land transfer, credit, and infrastructure activities. Chapter 5 concentrates on the lessons to be learned regarding agricultural research and extension, and agricultural development in general, from a set of cases of widespread dissemination of productivity-increasing practices and varieties. It also ties together some of these findings with those of the previous chapters.

## II. REINVENTING THE PROJECTS

2.01 Projects or components that worked well often ended up being substantially different from their original design, and in consistent ways. Many of the instances of good agency performance, moreover, originated outside the agencies meant to carry them out, and in agencies not specialized in that particular activity. The themes that ran through these episodes of better performance--regardless of the component--are the subject of this chapter. Briefly:

2.02 (1) The activity was often carried out within a time period shorter than the five to eight years planned for at appraisal. Longer-term, ongoing tasks were often transformed, in effect, into shorter blitz-like programs. (2) As carried out, the project activity frequently amounted to a much simpler version of what was envisioned at appraisal, or worked better only after a process of re-definition and paring down. (3) One or two project components were elevated to center stage. A governor chose a "signature activity" from the project's myriad activities, and supported it lavishly; or project managers themselves were drawn to a particular activity, which they saw as the "locomotive" driving the rest of the project. (4) Good performance could often be attributed just as much to the relative ease of the task assigned an agency as to that agency's inherent capabilities. Similarly, bad performance often reflected the difficulty of the task.<sup>12/</sup> The process of redefining the project's central task, and narrowing down its reach, also made project implementation easier than it was as originally conceived. (5) Project management was unusually subject to clearly identifiable

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<sup>12/</sup> Relating the performance of organizations to the relative ease or difficulty of their tasks has a long tradition in the literature. Lawrence & Lorsch (1969), and Thompson (1967) were seminal contributions. Some applications to development projects are Hirschman (1967) with respect to large World-Bank projects, Tendler (1968) with respect to electric-power generation and distribution by public-sector enterprises, Lamb & Muller (1982) with respect to the Kenya Tea Development Authority, and Tendler (1982) and Israel (1987) with respect particularly to the comparison between projects in the infrastructure and social sectors.

outside pressures to get things done, reach significant numbers of people, reduce costs, or be accountable in other ways. These "demand-side" pressures came from governors, beneficiaries, other state agencies, municipal governments, nongovernment organizations, and the World Bank. (6) Dynamic public managers often took tasks away from the agencies to which they were assigned by the project, for reasons explained below. That the "taking-over" agencies could do well at an activity with which they had no track record requires some explanation; it also raises questions about the standard approach to project design, whereby project components are assigned to the established agencies with expertise and a history in a certain sector--roads to the road agency, irrigation to the irrigation agency, and water to the water agency.

2.03 This chapter starts with the takeover phenomenon, because it was partly through the attempt to understand why takeover was happening that the other five themes emerged.

#### Taking over

2.04 Dynamic and successful agency managers almost always took over tasks from other agencies meant to carry them out. The project unit in Bahia took over the rural-road component from the road-building agency; Piau's project unit took over rural water supply from the water agency and, in an earlier period, kept control over the land-acquisition component long after a state land agency was set up to carry it out; Paráfb took over rural road construction from that state's road agency; in several states, project units spearheaded initiatives to provide credit to small farmers in a way that circumvented the central role assigned to the official banking system for this task--namely, the Central B&lk, the Bank of Brazil, and the Bank of the Northeast.

2.05 Though the units set up to coordinate the Northeast projects were responsible for many of the takeovers, dynamic managers in already-existing agencies with executing responsibilities also took over responsibilities belonging to other agencies. In the Ibiapaba project of Ceará, the extension service took over the siting of rural roads from the road agency; Ceará's federal land agency took away land-settlement activities belonging to the state land agency, as well as agricultural-extension tasks belonging to the extension service; Bahia's federal land agency took over land-demarcation and parceling activities from the state land agency; Sergipe's rural water agency took from the state power utility the responsibility for supplying small irrigators with the transformers, the cost estimates, and the design work for connecting them up to the power network.

2.06 When the project-coordinating units took activities away from the agencies meant to carry them out, they did not necessarily carry the tasks out themselves. Piau's project unit contracted out the drilling of wells for drinking water to private firms, a task meant to be carried out by the state water agency. Bahia's project unit contracted out road improvements to small local contractors instead of to the state road agency. Bahia's federal land agency contracted private firms to carry out land surveying and demarcation tasks, a task traditionally done by the state land agency and the federal land agency itself. Sergipe, mainly at the governor's initiative, created a new agency to carry out the rural-water component, instead of working through the existing state water utility. All these arrangements were not foreseen at appraisal.

2.07 Takeover agencies that contracted out the taken-over tasks to other agents did not always use private firms. Sometimes they used nongovernment organizations--Bahia's project unit contracted out agricultural extension and irrigation to the cooperative in the Irecê region, after taking those

activities away from the state agricultural extension and water agencies. Sometimes they contracted other agencies in the public sector itself--Parasba took road construction away from the state road agency and contracted the Army instead; Bahia's project unit turned partly to municipal governments, instead of the state road agency, for contracting out road improvements to local contractors; Ceará's project unit relied on the extension service rather than the road agency to plan the siting of rural roads; and several project units turned to the state development banks, rather than the Bank of Brazil and the Bank of the Northeast, to carry out small-farmer credit components.

2.08 The kind of rule-breaking and aggressive managerial moves that takeover involved are typical of dynamic and successful agency managers around the world. That the projects could attract such good managers and give them the rein necessary to make things work well, then, should be considered a sign of success and not a problem. But the takeovers also reflected the immense time and energy these managers had to invest in going against the grain of project design--lobbying the Bank and the Northeast regional development authority to accept their suggested changes, as well as fighting local bureaucratic battles to shoulder aside executing agencies that felt they had a place in the project guaranteed them by the loan agreement. In some instances, Bank staff were flexible about takeovers, recognizing their importance as "catalysts." But even in these positive cases, they worried that takeover contributed to bureaucratic redundancy, and therefore were loathe to condone the practice. This kind of redundancy, however, has often been pointed to as a source of innovation and good performance.<sup>13/</sup>

2.09 Takeover did not always work well. Without expertise and experience in the taken-over activities, takeover agencies sometimes carried them out poorly. When this seemed likely to be the case, Bank staff opposed the takeovers. Sometimes, the takeover managers themselves did not always like the results of what they did, though they thought the takeover arrangements better than leaving things where the project had assigned them. Takeover, needless to say, usually created resentment and opposition to the project in the agencies from which tasks were taken away.

2.10 Most significantly, takeover seemed to undermine one of the major goals of the Northeast projects, and of rural development projects in general--namely, to build strong institutions in the public sector. In the 1970s, the Bank often created new agencies to implement its rural development programs, as a way of getting around the problems of low salaries, inefficiency, and rent-seeking behavior in existing public agencies. Though this approach had previously worked satisfactorily in the infrastructure sector--for reasons discussed below--it did not transfer well to rural development. The new project agencies came to be resented by the rest of the public sector, whose cooperation the new agencies needed, for their better salaries and working conditions. When the project ended, some of these new rural agencies simply died--in contrast to the infrastructure case, in which an initial project tended to be a successful first step in building a capable agency; or just the opposite occurred, with the new agencies becoming too powerful for their own good--too centralized, too extravagant, too unwilling to relinquish responsibility to others who could do things better, including beneficiaries. New agencies created for land settlement projects came under particular criticism for the latter reason, including the only land-settlement project funded by the Bank in Northeast Brazil, Alto Turf (WB 1985).

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<sup>13/</sup> The seminal contribution to this literature is Landau (1969).

2.11 For all these reasons, the Bank and the Brazilians agreed not to create new agencies to carry out the Northeast projects. Instead, they would work through and strengthen existing public-sector institutions, no matter how inadequate they were. The only new entity would be a "modest" project-coordinating unit in each state,<sup>14/</sup> usually located in the agricultural planning or planning agency of the state government. The new unit had no power to carry out activities like road-building or agricultural extension, but would simply plan, coordinate, and monitor the carrying out of these activities by the existing agencies; though it was the lead agency in the project, it had no power to tell the executing agencies how to do things, or to withhold funding from them for poor performance.

2.12 If takeover behavior had been consistently associated with poor performance, it would be looked at as simply one of the many problems that affected rural development projects, or as the result of poor supervision by the Bank. But the fact that takeover was the standard operating procedure of the best project managers suggests that the design of the rural development projects was flawed and that the strengthening of established agencies was not happening according to plan. Moreover, the very success of the projects in attracting dedicated and dynamic managers laid the groundwork for takeover: these kinds of managers weren't interested in playing "modest" facilitator roles. Understanding why the good managers were always out to take over from the established agencies provides some clues about how to improve project design.

2.13 Why and how. Good managers took over from other agencies for various reasons. (1) Most important, they and their staffs preferred carrying things out to "merely" coordinating them; project execution conferred more power and prestige than coordination, was more satisfying, and had a transforming effect on agency morale. (2) Takeover managers thought the established agency was performing poorly--proceeding too slowly, doing shoddy work or not being committed to the project's goals, particularly those of assisting small farmers and the poor. (3) Takeover gave agency managers more control over the pace, quality, and cost of project execution, all of which they felt keenly responsible for; when established executing agencies themselves took over tasks from others, they saw this as necessary to making their own components work properly--as in the case of the rural water agency that took from the state power utility the responsibility for providing transformers to small irrigating farmers. (4) The established agencies frequently found it difficult to meet the large surge in demand for their services caused by the project, even if they had been performing adequately until that moment. (5) The projects, or one of their components, often attracted the strong support of a powerful state governor, whose pressure for "results"--often beyond those originally planned for at appraisal--could not be met by the established agencies if they continued with "business as usual." (6) The taken-over task was quite different from what the established agency was used to doing, even though it seemed to be the same thing--small irrigation instead of large irrigation, spot road improvements instead of rural road construction, irrigation instead of rural water supply, extension services for small farmers instead of large farmers, rural water supply with maintenance and operation instead of just installation of the system. Also, the taken-from agency perceived this different task as being more technically or administratively difficult, or less professionally "appropriate" than what it was doing--even though a changed approach was central to achieving project objectives of reaching the poor, reducing costs, and decentralizing the planning and implementation process.

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14/ In a few cases, a state land agency was also created by the project, but only if there was none. The new project units were usually formed within a preexisting institution--most commonly, the state agricultural planning agencies. The Sergipe project unit, one of the best-performing, was an agency unto itself.

2.14 How could agencies with no experience at a certain task have simply taken over from the established agencies and done a reasonable job--especially in an environment of weak public-sector institutions? What does this say about the "new wisdom" of not creating new agencies, and of instead building capacity over the long term in particular agencies specialized in particular tasks? The takeover agencies were able to carry out tasks to which they were unaccustomed because:

2.15 (1) They drew on the expertise of all the agencies in the state's public sector, always bringing a good specialist or two from outside, often from the taken-over agency itself.

2.16 (2) They sometimes contracted out the work to private firms, nongovernment organizations, or other agencies; even though they still weren't doing the work themselves, this gave them the power to supervise closely, hesitate over contract renewal, or threaten to withhold payment--a power they did not have when they were "just" coordinating the activity through another agency.

2.17 (3) They tended to lavish their attention, energy, and scarce funding on one particular taken-over component, while the other components were allowed to waste away from the chronic afflictions of inadequate executing agencies, funding delays, and inflation; this gave the takeover agencies the opportunity to do a few components "right," and produced a final version of the project that was narrower than the original, with fewer agencies playing an active role.

2.18 (4) In some cases, the tendency to narrow the project down was reinforced by strong support from a governor, who usually pushed for one particular "signature" activity, like rural water supply, small-farmer credit, or irrigation.

2.19 (5) The ability to attract, retain, and protect a few high-quality professional staff seemed more central to these successes than a long history with a particular activity; the best managers, whether involved in takeovers or not, were more concerned with quality issues regarding personnel than with staff numbers; they would work hard to get a few good professionals seconded to them from other agencies, fight for the establishment of merit criteria in hiring, and fiercely protect their prized professionals from political interference.

2.20 (6) The project tasks that were perceived by the established agencies as being different, more difficult, and less desirable than what they were used to doing were sometimes easier for the takeover agencies or more appropriate to their skills; as soon as rural water supply was defined to include organizing the community to operate and maintain its new well, for example, this took the activity onto a terrain more familiar to the project units--with their field agents trained to carry out the community-participation component.

2.21 (7) Many of the takeover successes were driven by an "inside" lobby of bureaucratic enthusiasts in the takeover agency; though such individuals could be found scattered throughout the public sector, including the taken-from agency, their influence had been diffuse and they usually did not have power in these other agencies; turning them into a critical mass in the takeover agency, and backing them with the strong support of a dynamic manager (and, sometimes, a governor), was crucial to the success.

2.22 The taste for execution. The preference for carrying things out explains, in part, the great enthusiasm for and attention lavished by project units on the community-participation component

(APCR). Though enthusiasm for APCR ran high throughout the Northeast because of its participatory style, there is no question that its special role as the project unit's only executing responsibility in the majority of the states also attracted intense bureaucratic energy to it.<sup>15/</sup> APCR was the only component for which project units had a chance to prove their mettle as executors without takeover, the only activity for which they were not dependent on the good will and competence of other agencies, and the only activity for which they could build a constituency genuinely beholden to them. It is understandable, then, that APCR always survived the narrowing down of the Northeast projects to their most "do-able" parts.

2.23 The taste for execution also helps explain the unusual performance of the water component in meeting its projected goals on time and, in many cases, exceeding them--though performance in maintenance subsequently proved inadequate, as discussed in paras. 2.29-2.30. APCR, that is, provided a foot in the door to project managers for their takeover of rural water supply and other activities<sup>16/</sup> that required a presence in rural communities. Because of the poor record on operation and maintenance of rural water systems, the Bank has recently taken the position that communities be made responsible for the operation, financing, and maintenance of their new wells--and that these arrangements should be in place before the well is drilled. Water agencies and engineers were not used to, or particularly interested in, doing this kind of organizational work (para. 2.31); the APCR staffs, in contrast, were quite involved in community organizing for the APCR projects, and therefore greeted the task of organizing for water with enthusiasm, seeing it as a mere extension of what they were already doing. Once the APCR staffs took over the community-organizing activity for water, it was a natural next step for the project unit to take over decisionmaking and supervision around the installation of the wells themselves. APCR staff wanted this too, because it enabled them to make sure that once the community was organized, the water would arrive in the form, at the time, and in the place it was supposed to. When that didn't happen, their credibility in the community's eyes was diminished.

2.24 Difficult and easy. As with rural water, other cases of good performance originated outside the agencies specialized in that activity. The largest land-purchase scheme of the Northeast projects was carried out mainly by a newly created project unit in the state planning agency of Piauif, rather than by a land agency; the most promising experiments in small irrigation for landless farmers in Bahia were carried out by a combination of the project unit and the local cooperative--both neophytes in irrigation--rather than the rural water supply agency, which was one of the most experienced in the Northeast; some of the best results achieved in getting credit to tenant farmers worked through ad hoc commissions of state institutions, rather than directly through the banking systems designated at appraisal; in Pernambuco and Sergipe, field testing and adaptation of important mechanical innovations coming out of agricultural research were carried out by non-specialized,

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<sup>15/</sup> The project units did not necessarily take over all the APCR functions, and often relied on field staff of the extension service to do at least some of the work. But in that the APCR component funded some project-unit field staff in several states (Table 8B), this gave the unit an executing presence that made the component different from all the others.

<sup>16/</sup> The Pernambuco program's innovative interventions in agriculture are another example (paras. 2.72 3.22, 5.35). Funding and field staff for these activities, not foreseen at appraisal, came partially out of the APCR component.

applied agencies rather than the research agency itself--the cistern for household water, and implements for animal traction, as discussed in Chapter 5.

2.25 In all these cases, as with rural water, the task was more difficult for the established agency than for the takeover agency. Doing it right required a change in an agency's previous way of doing business, which its professionals usually didn't like, and a certain loss of autonomy. The task redefinitions therefore became part of the cause for poor performance by the established agencies, as well as a reason for many of the cases of takeover. At the same time, redefining the task put it more within the reach and the tastes of the non-specialized takeover agency. And getting specialist help was not difficult, given the ease with which state agencies could borrow professionals from other agencies--especially when they had the support to do this from powerful governors and agency managers.

2.26 Whether or not tasks were redefined, they varied greatly in their relative ease or difficulty. Rural water is a good example because of the importance of explaining its popularity and performance in the Northeast projects, its takeover by project-coordinating units, and its partial displacement of other components like agricultural extension, credit, and irrigation. Accounting for less than 2% of appraised costs of the second-generation projects, water had already reached 10% of expected costs two to three years into project implementation.<sup>17/</sup>

2.27 The simplified stand-alone rural systems and standpipes of the Northeast projects were "easy" because they received crucial political support. This approach to water allowed governors to "deliver" to large numbers of dispersed rural populations within short periods of time. More centralized approaches to water, including individual household connections, took longer to plan, finance, and execute than the four-year term of office within which governors wanted to show "results"--as discussed in paras. 2.70-2.75. It was precisely on these grounds that Sergipe's governor rejected a 150-kilometer pipeline proposed by his water engineers to meet the state's rural water problem, and opted instead for the more decentralized, stand-alone wells that could be put in place more rapidly.

2.28 Water agencies also viewed water (rural or urban) as easy in comparison to irrigation, as discovered by the state water agencies that moved from water to irrigation.<sup>18/</sup> They saw irrigation as more "analysis-intensive," requiring more time, more skill in supervising contractors, and therefore more delay until installation could begin. Irrigation also involved more dependence on outside actors and other expertise than did drinking water--a knowledge of agricultural practices in the region, land-tenure constraints, and existing water-using customs. The water agencies switching from

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<sup>17/</sup> When the second-generation projects were being appraised, the Bank expected that a separate Northeast water-and-sanitation project would be designed and approved within two or three years. Rural water supply was therefore allowed into the second-generation program, but only provisionally for the first two years, and accounting for only 1.6% of total appraised costs (Table 8C). The failure of the separate water project to materialize partly accounts for the unanticipated increase in the role of the water-supply component. For drinking-water-supply expenditures in the second-generation projects, see note 50 to para. 2.92.

<sup>18/</sup> These distinctions between irrigation and water were pointed out to me by Hugo Eduardo Beteta, as were those between urban and rural water described momentarily.

drinking-water supply to irrigation complained of this loss of autonomy and increased complexity. They were disappointed that their performance in irrigation was not up to the reputation they had built in water. In addition, the planning of irrigation projects often unleashed project-delaying conflicts over the use of land and water, which drinking-water projects rarely did.

2.29 Spot checks of water systems installed under the first-generation projects sometimes found only half of them to be working, a finding that is not infrequent in such programs. This suggests that the good performance in completing the rural water component cannot be viewed as an unsullied success, and that rural water is "easy" only if operation and maintenance are not taken into account. Even as a construction task, however, rural water's exceeding of its targets only a few years into implementation of the second-generation projects is still impressive--given that (1) expenditures for the whole program were only half of what was expected by that time, (2) there was a marked lag in progress in other construction components like irrigation (or roads under the first-generation projects, where expenditures were only 67% of appraised levels). In addition, organizing communities for finance, operation, and maintenance before their water is supplied--as the Bank is now insisting--may actually make rural water supply and maintenance more difficult. In a small survey of systems that were functioning well, that is, community organization around water operation was not the explanation (Beteta 1990c). More commonly, a private individual using the water for productive purposes had organized and financed the operation of the system, and also distributed the water equitably--suggesting that the emphasis on community responsibility for maintenance and financing of rural water may be misplaced.<sup>19/</sup>

2.30 Insisting that communities be organized around rural water supply before wells are drilled also turns an easy task into a difficult and long drawn-out one. It deprives rural water of the support from elected leaders who choose programs according to how fast they can be completed, and also of the enthusiasm of technocrats committed to "delivering" something to the poor as soon as possible. This does not mean that the maintenance problem can be ignored. Rather, (1) some simple evaluation work needs to be done on the institutional design associated with the better-operating systems, given that the partial findings of this review do not point to the kind of community approach followed by the Bank; and (2) it may not be such a bad idea, in the interim, to work on the maintenance problem after the wells are installed, in order to preserve the "easiness" of construction. This is actually what the Bank has been doing with some success recently, refusing to disburse on new water systems until the old ones are put into working order. In not taking this stance more routinely, the Bank may be at least as responsible for "the maintenance problem" as are the communities that failed to organize. Whatever the ultimate choice, it is important to understand that organizing communities to maintain and finance the operation of water systems has considerable costs in terms of depriving rural water of its unusual "easiness." Beteta's findings, luckily, raise some doubts about whether community organizing around water is indeed a prerequisite for success at operation, and suggest that there may be less cumbersome ways of getting community water systems to function well.

2.31 The relative easiness of a task also depended on the nature of the executing agency, and what it was used to doing. The simplified rural water programs of the Northeast projects would seem

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<sup>19/</sup> Beteta attributes the difficulty that water planners have in acting on what he found to the tradition of separating "social" uses and justifications for rural water from productive ones.

easier than urban water supply because they were less technically sophisticated and involved stand-alone systems, usually without individual household connections. But urban water agencies saw rural water as more difficult than urban: they couldn't charge as easily for water in rural systems, they were barred from the capital-intensive, central-system solutions that they liked and were accustomed to, they had little opportunity to use their sophisticated engineering skills, and the operation and maintenance of the system depended on the unpredictable behavior of users more than in urban water--at least for the way the Bank was insisting that operation and maintenance of rural water be done.

2.32 A similar distinction can be made with respect to public and private irrigation, or large and small. State-government agencies frequently viewed private irrigation projects as easier than public ones, or smaller as easier than larger. The eminent-domain proceedings and displacement of inhabitants required for public irrigation projects, coupled with the long time period over which these investments were carried out, caused conflict, resistance, and apprehension. As a result, governors and other state officials increasingly came to see public irrigation projects as politically costly. In the eyes of the established irrigation agencies, however, private irrigation was more difficult. Instead of being able to design self-contained and dramatic projects, starting with the tabula rasa of newly expropriated land along an irrigation perimeter, private irrigation projects had to work with existing patterns of landholding and water use, in a more piecemeal fashion, and with less conspicuous physical results.

2.33 For similar reasons, many considered land purchase easier than land expropriation. Purchase did not unleash the costly conflict and delay that expropriation did, and purchase gave more control than expropriation to the lead agency--just as drinking-water supply was more within the control of a water agency than irrigation. Purchase depended less than expropriation on the concurrence, hard work, and ethical behavior of other institutions--the court system, the legislature, other land agencies. In addition, purchase was something "any" agency could do--not just, as in the case of expropriation, an agency with formal authority over land matters. Though project-coordinating units and other non-land agencies did not have the formal authority to expropriate, let alone to execute other components, they could obtain the authority to purchase.

2.34 Spot improvements on rural roads and the use of small local contractors, though technically less sophisticated than road-building or re-construction, could be managerially more complex because they required the letting out and monitoring of many small contracts.

2.35 The examples above show that the ease or difficulty of a task did not necessarily inhere in the technology of the task itself, but also related to (1) its organizational or managerial features; (2) what the agency had been doing previously and was specialized in; (3) whether the staff members of the relevant agency liked the task, determined in part by whether they considered it "professional"; and (4) the amount of pressure or support for that particular activity that came from outside the agency. For each agency that didn't like a particular task, moreover, there was often another one that did. Whereas irrigation agencies preferred large to small irrigation, as noted above, the less specialized state agricultural agencies or project units preferred private irrigation to public. Whereas state power utilities didn't like the complications of attending to the requests of numerous small irrigators for transformers, agricultural agencies did. Whereas road agencies didn't like carrying out analyses of traffic flows and concentrations of farm production in order to site farm-to-market roads, agricultural extension agencies did.

2.36 Among the infrastructure agencies, in sum, the most significant task redefinitions of the Northeast projects required that agencies change (1) from rural road construction to spot improvements; (2) from rural water supply to irrigation; (3) from urban water supply to rural water supply; (4) from individual household connections to community standpipes; (5) from large irrigation to small irrigation; and (6) from construction (in roads and water alike) to operation and maintenance.<sup>20/</sup> These changes, in turn, created problems for the agencies involved. First, though the redefined tasks were often less sophisticated technically, they could be administratively more difficult to the extent that they required a more decentralized style of operation. Second, the redefined task required more cooperation from users and sometimes from other agencies, whereas the agency had been able to work in a more self-contained way previously. Third, to an agency's professionals, the redefined tasks often represented a professional "comedown" in terms of standards, prestige, and past work; the new tasks were less technically sophisticated, less equipment-intensive, and more dispersed. Fourth, the established agencies and their professionals simply didn't like the tasks as redefined by the project, or as insisted on by the Bank during the course of execution, partly because they were not particularly interested in the distributional objectives of the program.

2.37 Many of the examples of task redefinition and its problems come from the sector of rural infrastructure and are particularly relevant because of the new emphasis on rural infrastructure in the research on agricultural development and in the Bank's thinking about poverty-reducing rural development strategies. Namely, established infrastructure agencies will often find it difficult, or not to their taste, to come up with the "right" version of rural infrastructure in the 1990s--that is, as a leading investment in a poverty-reducing, decentralized rural growth strategy.<sup>21/</sup>

2.38 Getting around old agencies. The takeover agencies succeeded in carrying out tasks with which they had little experience, as noted above, partly by finding competent and sympathetic professionals in the established agencies, and borrowing them. Putting the sympathetic professionals in a more empowering bureaucratic environment--even if only temporarily--sometimes gave the redefined task a better chance to be learned and adopted ultimately by the established or taken-from agency itself. Once the new approach had been tested and proven, it became more interesting to the established agency--partly because the "invasion" of its turf by an outsider agency aroused its competitive instincts. In the best of circumstances, the taken-from agencies eventually showed interest in getting back the task they had lost and doing it themselves. When the Irecê regional office of the Bahian water-supply agency (CERB) lost the small-irrigation component to the local cooperative, its main engineer went too. After working with the coop to set up the program, he went

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<sup>20/</sup> The Bank never insisted on maintenance of already-constructed roads as a condition for disbursement on new ones, the way it did in water--partly because roads were dropped from the second generation of Northeast projects and partly because maintenance failures are not as conspicuous in roads as they are in water. See Cook (1985) for issues regarding maintenance of roads built under the POLONORDESTE projects.

<sup>21/</sup> See paras. 4.46-4.52 for other lessons about rural infrastructure related to land tenure and the size distribution of landholdings.

back to CERB and lobbied hard to get the component back by showing that CERB could do small irrigation--and "better than" the cooperative.<sup>22/</sup>

2.39 To be successful, takeover need not be permanent. Indeed, it may have the most lasting effect on the way public agencies do things if it is not--namely, if the borrowed professionals go back victorious, after the taken-over task is successfully implemented, to their original agencies. The temporary appearance of the new agencies on the scene may have been the catalyst for getting the task to be taken up, ultimately, by the established agency. If new agencies drop out of existence when a project terminates, in other words, this does not necessarily signify the failure that it is sometimes interpreted to be.

2.40 These findings also provide a different perspective on the much-commented problem of "instability" in the management of public agencies in third-world countries. Though agencies suffer from the frequent departure of good managers and staff, as chronicled in supervision reports, other agencies may at the same time gain. Though any particular agency may be "unstable," the pool of expertise available to work on a problem may be much less so. Creating such a pool in the public sector of the Northeast may be one of the most important contributions of the Northeast projects--not fully appreciated precisely because it is an "externality," not captured in the evaluation of any particular "unstable" agency.<sup>23/</sup>

2.41 Under some circumstances, then, new agencies or units may not be such a bad idea--if the tasks are technically or administratively easier than most but, for some reasons, are difficult for the established agency. Shifting the scene of activity from one agency to another, though seemingly redundant, can also help a problem to get worked on properly--as the best of the takeover stories show. The experience and track record of an agency with a particular activity, that is, may be precisely what makes it difficult to that agency. Sometimes there may be good reason then, not to place a certain component in the hands of the established agency. At the least, the new task may do better if first developed outside the established agency.

2.42 These explanations as to why new agencies or units sometimes did well parallel the reasons for which new agencies did better in infrastructure than in rural development. For

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22/ The theme of "healthy" competition between public agencies has been around for some time. Landau (1969) explored its favorable effects on innovation in the public and private sectors; Bunker (1985) pointed to its role in keeping down corruption in a comparison of two agencies providing services to colonization projects in the Amazon. Marshall (1982) discussed its importance in the U.S. Model Cities programs of the 1960s, which explicitly promoted inter-agency competition by channeling funding to "alternative" local organizations as well as to city and state governments. These local governments, responding competitively to the more innovative performance of the alternative organizations, eventually adopted the alternative models themselves. At the Bank, Lamb (1982) called such competition in the public sector a "market surrogate" for the healthy competition occurring between private firms, and Israel (1987) devoted a whole chapter to these "competition surrogates."

23/ Schmitz (1990:17) and Bell et al (1982:132 & 1984, as cited in Schmitz) point to the same kind of positive externality associated with the "drift" of professionals between firms in the private sector--Bell with respect to infant-industry protection in general and Schmitz with respect to the Brazilian computer industry.

infrastructure projects, it did not matter whether other agencies were jealous and resentful, because the projects were not dependent on coordinated action with other parts of the public sector. The rural development projects, in contrast, seemed to maximize the dependence of agencies on each other. And to the extent that the rural development agencies were successful, it was partly by virtue of their transforming their work--through takeover--in a way that made them less dependent on other agencies--namely, more like the new infrastructure agencies, with their self-contained "starter" projects.

2.43 This guarded affirmation of the concept of creating new units, or assigning tasks to agencies where they don't belong, does not really fit the project-coordinating units as they were set up under the Northeast projects. The mandate of these new units was just the opposite of what is being recommended here: they were supposed to coordinate the activities of myriad other agencies. This burdened them with the maximum degree of dependence on other agencies, together with minimum control over the quality of what happened. And to the extent that they turned out successful as "new" agencies, it was when they did what they were not supposed to--narrowing down the projects to a few components, and wresting control of those components away from the agencies originally responsible for them.

2.44 Finally, explaining agency performance in terms of the relative difficulty of the task helps decipher the strange cyclic behavior of agencies. Those with years of good performance often experienced sudden and prolonged falls from grace; and those that received consistently poor grades on performance for years often showed sudden and dramatic improvements--an issue discussed later (paras. 5.21-5.23). Though evaluators usually attribute these abrupt changes to the loss or arrival of a good manager or to "politics," the factors discussed above are equally important. The sudden fall from grace of Sergipe's rural water agency, for example, relates in part to its being made to switch from simplified rural water systems to irrigation. These kinds of explanations, at the least, are more systematic--and more within the control of project designers--than "leadership" and "politics" are.<sup>24/</sup>

#### Taking control and narrowing down

2.45 Inflation and chronic delays in the transfers of budgeted counterpart funds from the central government to the executing agencies made planning and implementation in the Northeast projects extremely difficult. A complex approvals structure for funding transfers and for authorizing changes in project design required the approval of the Northeast regional development authority (SUDENE), the Bank and, in some cases, the respective ministry at the federal level.<sup>25/</sup> To obtain the transfers due them, agency managers had to invest considerable time in lobbying the appropriate authorities, including state and national legislators. Added to these problems was the environment of increasing fiscal austerity in Brazil, with repeated cuts in agency staffs, or threats of them, and the demoralizing effect of constant fear of these cuts on staff performance. Though Bank reports have identified and analyzed these problems extensively, and the Bank and the Brazilians have worked hard to reduce them, they still persist. Project managers coped with these problems in three

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24/ Operational suggestions following from this discussion of the relative ease and difficulty of tasks are presented in Chapter 5, after presenting further examples concerning agricultural research and extension.

25/ See Batt (1989) for a detailed description of this situation and the history of attempts to improve it.

ways: (1) they narrowed down the projects to one or two components, (2) they contracted other agencies and private firms for services, and (3) they escaped some of the inflexibility around their budgeting, and made up for budget shortfalls, by investing their agencies' cash balances in the money market.

2.46      The brighter side of inflation. The acuteness of the problems cited above, and the way they consumed the attention of the Bank and the Brazilians, have somewhat obscured a more positive dynamic behind them. The havoc wrought on budgets by inflation and funding delays gave project managers some liberty to "re-invent" the projects more to their liking. Narrowing things down to a few favored components represents one of these re-inventions. If funds were less than planned for, and if one agency didn't come through the way it was supposed to, this created a kind of chaos in which managers could stray from project norms unobserved--all in the name of "making do" with a smaller amount of funds than had been budgeted. Those who might object--the Bank, SUDENE, or the central-government ministries--were themselves distracted with the task of dealing with the same problems of inflation and delays in the transfers of counterpart funding to the project agencies.

2.47      Also contributing to this chaos-driven "flexibility" was the central government's response to high inflation, in the form of an indexed and highly liquid financial instrument, the "overnight" market. Created in the 1970s, these money-market-type accounts allowed individuals, firms, and public agencies to keep their operating funds in accounts that kept up with inflation and yielded at least a small real return.<sup>26/</sup> Even when the return to project agencies from keeping their cash balances in the overnight did no more than preserve their value against inflation, the return was nevertheless "off the budget"; it was not subject to the same regulations and scrutiny by SUDENE, the central government, or the World Bank, so that project managers did not have to obtain permission from these entities to finance activities or use procedures not sanctioned in the project agreement or annual operating plan. Project managers liked the overnight earnings, in sum, because they could be tapped whenever needed, and provided more flexibility and control over their budget than was the case with the transfers of Bank funds and central-government counterpart.<sup>27/</sup>

2.48      In certain ways, then, the larger economic and institutional problems in which the Northeast projects were embedded opened up opportunities for dynamic project managers to do things more as they saw fit, and to break out of the constraints of project design--amounting to a kind of de facto fiscal decentralization that could not be achieved formally. This is not to say that inflation,

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<sup>26/</sup> Central-bank regulations have long prohibited public agencies from investing in the overnight, but the practice is widespread throughout the country. Rates on these overnight investments could vary considerably from one month to the next, and between one depositor and another, because the rates were negotiated individually between the bank and the depositor on large deposits like these.

<sup>27/</sup> A few project managers included these overnight earnings in the "counterpart" they reported to the Bank, and against which the Bank disbursed its own share of project financing. Though certainly a "novel" interpretation of central-government counterpart, this did not violate the spirit of the counterpart agreement--since returns on overnight accounts were paid to investors out of the Central Bank.

shortfalls, and delays and the increased costs they cause are good things.<sup>28/</sup> The lesson of this "brighter side" of chaos, rather, is that good managers wanted and performed better with extra flexibility. The returns to be had from the overnight represented one way to gain this flexibility.

2.49 Contracting out. The takeover managers contracted out tasks because of the different kind of relationship with the executing agent that was thereby made possible. This was the case whether these managers contracted a private firm or a public agency (or a non-profit private organization). Though the takeover managers sometimes viewed the private firms they contracted as more costly and less desirable than the appropriate public agency, they nevertheless preferred the firm because of the different kind of bargain they could strike with it--proposing that it carry out a specific task, at a specific price, and within a specified time period.<sup>29/</sup> This greater specificity was possible, in turn, partly because the contracting out happened only after the project had started, and project managers knew more than they did at appraisal. Problems had been identified, the more difficult tasks had separated themselves out from the easier, the weaknesses or unwillingnesses of certain agencies had become apparent. In contracting out certain tasks, then, project managers were also sloughing off other ones that now seemed to promise only headaches and little progress.

2.50 In contrast to these contracted arrangements, the project agreements guaranteed a place in the project for the executing agencies regardless of their performance. The project unit did not have the kind of sovereign control that it had when it directly contracted an agent to carry out a particular task. Under the contracted arrangements, moreover, the "bilateral" negotiation between the two parties to the contract made for a more "accountable" environment of implementation. This contrasted with the numerous agents participating in a typical project agreement--the World Bank, the Northeast regional development agency, the executing agencies, the central-government ministries, and the project-coordinating unit.

2.51 Project units and other agencies contracted out, in sum, because it gave them more control than the project did over the quality, pace, and cost of execution of the project, and more power to hold executing agents accountable--whether that agent was private, public, or nonprofit. The lesson to be drawn from this experience is that inter-agency obligations in a project should follow the narrower and more highly-specified form they took in the takeover cases. This contrasts to the

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28/ The "creative" investment of project cash balances should not be attributed solely to the peculiarities of the Brazil's economic situation and macro policies. In a large Bank-funded urban development project in India--a country with almost the opposite picture in terms of inflation and macro policy--project managers also attributed great importance to their cash balances (Sanyal & Tewari 1990:26). Competition by banks for the large cash balances that flowed into such donor-funded projects allowed project management to exact a quid pro quo from the bank where it chose to place its deposits--in this particular case, the opening of a small-enterprise credit fund consistent with the objectives of the project. In a similar fashion, the relatively large amount of outside donor funds available to the Grameen Bank in Bangladesh have given that institution considerable bargaining power vis-a-vis the banks competing for those deposits (Sanyal, personal communication).

29/ Sometimes, the agent that ultimately replaced the original executing agency itself "lobbied" for the takeover. The Irecê cooperative in Bahia, to which the project unit handed over the irrigation and agricultural extension components, "lobbied" the project unit and state legislators to get the component away from the state agencies.

more loosely defined and equal relationships characteristic of the Northeast project agreements, where no single agency had the responsibility and the power to deliver.

2.52 The second generation of Northeast projects made a valiant attempt to narrow down the number of components. Health, education, roads, electrification, and drinking water<sup>30/</sup> were excluded, leaving "only" those components directly related to agricultural production--credit, extension, research, irrigation, land tenure, seed production and dissemination, input distribution, and APCR. Though an important step in the right direction, this improvement still left too many bureaucratic actors on the scene--the agricultural extension service, the agricultural research centers, the land agencies, the banks, and the project-coordinating units--to name only the most important.

2.53 Having a single agency in charge would not preclude that agency from being responsible for more than one activity--as the stories of successful takeover illustrate--so long as the agency has the power to do things itself, contract them out, or force other agencies to collaborate. But this would require that the Bank pay more attention to implementation in relation to appraisal.<sup>31/</sup> During the first months of implementation, the early experience would be assessed and hard decisions would have to be taken about the institutional direction the project would take. The appraisal process itself would involve less the mapping of a standard rural development project onto a particular state than it would a search for a single agency that had the power, the interest, and the commitment to mobilize what it needed from the public and private sectors. The result of such an appraisal process would be closer to the stripped-down versions of the current Northeast projects, which have surfaced two or three years into their implementation. But the process of getting there would be more efficient: it would go with the inclinations of the dynamic managers, rather than against them.

2.54 If this approach had been used to design the Northeast projects, they would not have looked so similar to each other in their appraised form. After having gone through a process of selection and winnowing from a "menu" of financeable activities suggested by the Bank, each project would have represented a unique fit to the institutional, political, and agronomic environment of its state. The Bank would have accepted, moreover, that the fit might no longer be good a few years later, and the project might have to be changed to reflect changed circumstances and new learning--as happened when the Bank allowed rural water supply to take on a larger role in the second-generation projects a few years into implementation. The Bank now believes that allowing water into the PAPP projects was a good thing to do, partly because it was able to have a constructive influence on improving the way rural water supply was carried out: the strong political pressure for water, together with the technocratic enthusiasm of project staffs for it, forced project managers to face the problems of faulty maintenance and inadequate financing for operations--as the Bank insisted--rather than to retreat in disinterest to the safety of an easier component. The lesson of the water story, then, is not just that it was a good fit, but also that this could not necessarily have been determined at appraisal. By being demanding during implementation about operation and maintenance and its financing, the

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<sup>30/</sup> After the first two years, as explained in note 17 to para. 2.26.

<sup>31/</sup> Several Brazilian agency managers and staff expressed a desire for more of a presence of Bank supervisory staff during implementation, contrasting this with the "extravagant" Bank presence during appraisal.

Bank was shifting its energies from the appraisal to the implementation period, in effect, and having a significant impact in the sector.

2.55 The problem with agricultural extension and credit. Though takeover initiatives ran the gamut of project components, it was easier for project units to take over in water, irrigation, roads, and activities associated with land distribution--as distinct from agricultural extension, research, and credit. The more "takable" activities could be contracted out to private or other agents, while this was more difficult with credit, extension, and research.

2.56 The "takable" activities were also investment-intensive, in contrast to the staff-intensive nature of activities like extension, research, and credit. Investment activities could be more easily stopped and started at will, in accordance with the delays and shortfalls in funds received from the federal government, a chronic problem of the Northeast projects and of development projects in general; to cope with this problem, project managers simply delayed the letting of contracts, or put payments to contractors on hold. Staff-intensive services like agricultural extension could not adjust so easily to these ups and downs; they had to pay their staffs regularly, and could not lay staff off or on in accordance with the ebb and flow of funds. Political pressure, moreover, dictated that salaries and preservation of staff always get priority--not only over investment, but over payment of non-salary operating costs like fuel for vehicles and travel allowances. This meant that the expenditures complementary to good staff performance got sacrificed when funding was delayed or fell short. In Ceará, for example, the Secretary of Agriculture reported that 85% of extension's costs were going for salaries, leaving only 15% available for non-salary operating costs.<sup>32/</sup>

2.57 Investment programs were able to fall back on another source of funding if funds arrived late--namely, the private contractors themselves. By accepting late payment, private contractors absorbed the costs of public-sector funding delays themselves and, in effect, "advanced" to the public sector the funds for their payment; or, they simply stopped their work in mid-stream, to resume when funds started flowing again. The labor-intensive public activities like extension, in contrast, had no such mechanism for insulating project activity from the ups and downs of funding delays.

2.58 For all these reasons, project managers had less room to maneuver and to seek solutions more to their liking in the labor-intensive activities. When the performance of the extension service left something to be desired, they could not simply leave extension in the lurch, turn to another agent, or spend the money on another component--given that the projects typically financed a third of the salary costs of the extension service. But they could do so with water, irrigation, and roads--not only for the reasons cited above, but because capacity also existed in the private sector, and because the infrastructure agencies were not dependent on project funding to pay a significant percentage of staff salaries.

2.59 The Bank justified the funding of extension salaries in the Northeast projects and elsewhere on the reasonable grounds that this was the only way to gain leverage over extension

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<sup>32/</sup> Staff appraisal reports for five PAPP projects projected salary costs at an average 48% of total agricultural extension costs (Bahia 45%, Piauí 51%, Pernambuco 30%, Paraíba 82%, Maranhão 30%).

activities.<sup>33/</sup> The result, however, was in some ways just the opposite: the larger the percentage of an agency's salaries that were funded by a project, the less leverage the Bank or project unit had. This was because of the politically disastrous consequences of withholding an agency's funding for poor performance, or transferring those funds to another agent. Similarly, and ironically, project units ended up protecting the agency they were most dissatisfied with--agricultural extension--and sacrificing the infrastructure components, which they often liked more. All this helps explain why expenditures for the popular road component were only 67% of those expected, while those for extension were 110% of expected (Table 8). Indeed, extension was the only major component of the first-generation projects for which actual expenditures were greater than appraised--and despite the fact that total expenditures were significantly less than expected for all the projects, only 59%.<sup>34/</sup> In addition, the number of new extension staff hired under the projects was 21% higher than that expected at appraisal, increasing in all but one of the six projects for which such data were available (Table 8B). Finally, extension's share of total appraised costs was increased from 14% in the first-generation projects to 24% in the second (Table 8A).

2.60 Though credit was also a staff-intensive service, its share of costs fell from 27% appraised to 18% actual, and it had the lowest level of disbursement among all the components--50% of appraised. Credit's staff intensity did not lead to higher disbursements, in contrast to extension, because the payroll of the participating banks, as well as their capital, was in no way dependent on project financing the way agricultural extension was. Credit's problems remained unresolved, however, because it was more difficult to take over than other components. The institutions handling credit under the Bank projects were more centralized than those carrying out the other components--mainly, the Central Bank, the Bank of Brazil, and the Bank of the Northeast--and operated according to standardized regulations. In contrast to the state agencies carrying out other components, these institutions were not subject to the will of state government. They could not be ordered around, and the activity could not be contracted out to others--though valiant attempts were made to do so throughout the program.

2.61 Analyzing project activities in terms of their "takable" qualities throws a different light on "the extension problem" (and the credit problem). The difficulty project managers experienced in gaining control over extension and credit, that is, partly explains the frequently poor performance of these components. Similarly, the greater ability of project managers to take over infrastructure, and the greater adaptability of these activities to stops and starts in project funding, help explain why project managers often threw up their hands in frustration over extension and credit, and narrowed down their attention to more takable components like water or land. The critics of agricultural extension, however, question the value of the activity in itself, and the quality of the service: they ask whether extension has anything to bring to a farmer that well-functioning markets cannot, and

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<sup>33/</sup> Though this justification was used in the first-generation projects, a somewhat different one was used in the second, where the Bank funded salaries and other recurrent costs on a declining basis as a quid pro quo for the federal government's commitment to abolish other competing rural programs. That the federal government found it difficult to keep that commitment had to do partly with the salary-intensive nature of these similar programs, and partly with the fact that they offered additional opportunities for political leaders at the national and regional level to have their "own" development programs.

<sup>34/</sup> Table 9. Extension expenditures went up in every state but Bahia.

whether young extensionists with minimal agricultural training can teach anything to an experienced peasant farmer.<sup>35/</sup> Though these doubts are important ones, this analysis focuses instead on some difficulties inherent in trying to elicit good performance from extension services, and their greater vulnerability to the fiscal environment.

2.62 Understanding takeover, in sum, helps explain the root of "the extension problem," as well as others. The conclusion to be drawn from the preference project managers sometimes reveal for infrastructure (and other components) over extension and credit is not necessarily that one activity has higher priority, or yields greater impacts, than the other. Rather, managers preferred certain activities because they offered the opportunity for greater control. This perspective helps to reconcile two seemingly contradictory impressions on extension that often emerge from reviews like this--a generalized exasperation with the extension service alongside glowing reports of particular extension successes in certain regions at certain times. The question, then, is how to increase the incidence of these successes and subject extension to more performance-inducing pressures. The successes are examined, and the question taken up, in Chapter 5.

2.63 Coordination. During the implementation of the first-generation Northeast projects, supervision reports routinely complained of how the "lack of coordination" between agencies impeded project execution--a common problem in multi-agency projects throughout the world. In designing the second generation of projects, as a result, the Bank tried to place responsibility for particular components more squarely within particular agencies.<sup>36/</sup> Coordination between at least two agencies, nevertheless, continued to be crucial to the carrying out of some components--even though this involved fewer agencies than in the previous set of projects; and the project unit continued to have the same "coordinating" role it had in the previous generation of projects, together with the same lack of power to enforce or withhold funding if performance were not satisfactory. Coordination problems continued to plague the Northeast projects, therefore, though reducing the number of agencies involved definitely helped.

2.64 Despite the repeated failures of coordination, the Northeast experience shows some striking instances of success at coordination--often involving the very agencies that had routinely received poor grades on coordination during the life of the projects. Some of these instances of coordination occurred around the carrying out of the most favored single activities referred to above. Narrowing down the projects to a favored component or two, however, did not always mean the exclusion of others. Sometimes, one component became the center around which the others were organized--the "locomotive" (carro chefe), as several project managers said, that "pulled" the others. In Bahia, after 1985, the project unit mobilized credit, extension, road-building, and input-supply around the "locomotive" of that moment--the agrarian-reform settlements--even though this was not

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<sup>35/</sup> See, e.g., WB (3/30/89, para. 32).

<sup>36/</sup> In some cases, Bank staff sensed that even if it were desirable to assign formal responsibility to only one agency they deemed strong, it would nevertheless be politically difficult. They therefore deliberately blurred the issue in the multi-year legal documents constituting the project agreement. In other cases, when Bank staff thought that an agency might be weak, they designated responsibility to more than one agency as a way of building a system of checks around a weak agency. This diffusion of responsibility also provided some formal basis for subsequent takeover, if that proved necessary, by an agency deemed more reliable at appraisal--usually the project unit.

foreseen at appraisal. In Pernambuco, the project unit organized agricultural extension, research, and credit around a special program focused on identifying and breaking bottlenecks in certain crops in certain micro-regions--also not foreseen in the appraised project (paras. 2.72, 3.22). In the semi-arid Irecê region of Bahia, where agrarian reform was minimal, the project unit introduced collective irrigation by tubewell for the first time in the region; this became the centerpiece around which agricultural extension, credit, potable water, and APCR projects were organized. The Project Completion Report for the first Piau project, in fact, pointed to that project's land-transfer component as just such an "organizing theme"--concluding that coordination was more likely to occur when multi-component projects were organized around such "leading" themes (WB 6/26/89, paras. 8, 7.04). Organizing the appraised project around a single theme actually set Piau apart from all the other projects, including Piau's second-generation project itself.

2.65 When coordination between agencies did take place, the coordination was often informal, ad hoc, and episodic--not the result of a sustained pattern of coordinated work, as envisioned in project design. These episodes frequently involved narrower, shorter-term, more concrete and results-oriented objectives. In Pernambuco, for example, the project unit organized small teams to carry out "lightning" canvasses of a municipio or two within two weeks; the team identified bottlenecks in the production or marketing of small-farmer crops that might be broken within a one-year crop season, with short-term credit often playing a role.

2.66 The PROMOVALE project in Ceará--an "alternative" to the Bank-funded projects in the eyes of the Ceará governor of the early 1980s--also represented a major narrowing down of the concept of an integrated rural development project, yet without necessarily focusing activity in one agency.<sup>37/</sup> Though the governor focused the project on small-scale private irrigation, this did not imply narrowing it down to an irrigation agency. Because of the decentralized and "low-tech" approach taken by the state in this case--quite modest in comparison to most irrigation investments in Northeast Brazil--little input from an irrigation agency was required, since the equipment could be bought by individuals on the private market with credit provided through the project.

2.67 A project like PROMOVALE most needed an agile response from the state electric utility to demands for power hookups from the new irrigators--as well as ready accessibility for the new irrigators to credit for purchase of the pumps. The governor and his lieutenants made sure that the power utility and the banks did not drag their feet. This contrasts strikingly with the Bank-financed Ibiapaba project in the same state and at the same time. Even though Ibiapaba was the only project to include an electrification component, the production benefits to be gained from newly irrigated farming were not fully realized precisely because of the difficulty farmers had in obtaining power connections for irrigation. Many went ahead and irrigated anyway--using the more expensive diesel rather than electricity, and even when the power lines passed overhead. Ibiapaba could not get satisfaction from the electric utility, in sum, because it did not have the same single-minded attention from the state's governor that PROMOVALE did.

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<sup>37/</sup> PROMOVALE was actually the initiative and pet project of the vice-governor, who was from the region of the project. He was strongly backed in this endeavor by the governor and the State Secretary of Agriculture.

2.68 Studies of coordination between public agencies in various countries have found that they usually do not have much to gain from it.<sup>38/</sup> In fact, they often have a lot to lose--namely, autonomy, control over the pace and quality of what they do, and the power that results from doing good work. On the few occasions when coordination has worked well, the studies found, it was perceived by all the agencies involved as urgent, and as the only way to solve a problem that was afflicting more than one agency. In the Northeast projects, the frequency of takeover in itself shows that coordination was not the only possible way to solve a problem. In most cases, moreover, only one or a few agencies saw high-quality and timely project execution as "urgent." The project unit, for example, had much more at stake than the executing agencies in seeing that the project was carried out successfully, because the project was its main activity, or the only one.

2.69 The successful episodes of coordination cited above in the Northeast projects had a different underlying structure than the failures. This explains why these episodes could involve the same agencies that were named unsuccessful at coordinating in the chronic laments of the supervision reports. Not only were these better moments episodic and ad hoc, as noted above, but they had the two ingredients of successful coordination found in the studies cited above. First, all participating agencies felt a strong sense of urgency because of (a) disaster-type circumstances that threatened the economy of the state and its social fabric--drought, epidemics of crop disease--or (b) an "order" to coordinate at a particular moment from a strong authority, usually the governor, who held power over all the agencies, including the project unit itself. Second, coordination was the only way to carry out a particular task; effectively combating disease in the orange groves of Sergipe, as discussed in para. 5.10, could be done only with a combination of subsidized credit and extension. In order for projects to capture coordination of this variety in their design, they would have to focus on narrower tasks that were considered more urgent, and/or concentrate the power over a project within a single agency. I return to these themes in Chapter 5.

#### Good governors and hard deadlines

2.70 Many of the stories of successful project implementation revealed a strong and highly supportive governor in the wings. The demanding governors (or state secretaries) provided protections that were crucial to successful project implementation: (1) protection from the pressure to hire mediocre staff, or to fire excellent staff on political grounds; (2) protection from pressure to make technically undesirable choices; and (3) protection from shortfalls or delays in the funding transferred to the projects from central governments--delays that governors and their appointees lobbied forcefully to prevent. Poorly performing agencies and projects were chronically deficient in these protections, as revealed again and again in supervision reports.

2.71 Though the kind of political support provided by the governors obviously helped, it is important to understand how it changed project design. To ambitious governors, the Northeast projects represented less an integrated package than a menu from which they could choose one or two components of their liking. They rarely saw the complete projects as vehicles for making a political mark, because they considered them too complex, too inflexible, too long in planning and execution. The projects did not, as the governors said, produce "results." A supportive governor, therefore, did not simply "buy" the project in its entirety. He also re-molded it to his liking. If he was prevented

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<sup>38/</sup> See Weiss (1987) and the studies cited therein.

from doing so by the Bank, the project agencies or SUDENE, he lost interest or fashioned his own more modest project outside "the Bank project." Or, as noted above, the backing off was sometimes associated with support by the governor for a "signature activity" within the project, which helped to make a piece of it work well:

2.72 In Sergipe, the governor fashioned the project around rural water supply--140 simple systems, 2,500 cisterns to catch rainwater from roofs, and 600 small communal ponds. (He also financed roughly three times that number of cisterns out of funds raised independently of the project.) In Piauif, the governor "bought" the land-purchase component of the project in particular, because it produced quick results that could be celebrated in dramatic, highly publicized ceremonies where landless peasants received their titles. In Pernambuco, the governor chose small-farmer credit fashioned around actions to break certain bottlenecks in the production of certain crops; the state government supplied the majority of credit funds from outside the project (para. 3.22), moreover, and at a time when project credit was not even working well. In Ceará, the governor wanted to bring private, small-scale riverine irrigation to a particular valley; when the project unit didn't allow him to re-fashion the Bank-funded project in this way, he raised his own additional resources in Brasilia, and was forced by their paucity to be modest in his approach. The result was the PROMOVALE project mentioned above, completed within his term and considered by the staff of the project unit to be "better" than any of the three Bank-funded projects in the state.

2.73 On some occasions, the Bank and/or the Brazilian coordinating agencies resisted the governors' attempts to re-mold the projects. They worried that the projects would be diverted from their course, often to serve narrow "political" ends. This concern was well-grounded in experience, though "diversion" or "meddling" could be associated with good results as well as bad--as illustrated below. On other occasions, the Bank tried to accommodate the "menu approach," recognizing the advantages to be gained from strong support of the projects by governors. Some Bank staff and Brazilian agency managers felt that SUDENE, rather than the Bank, was the "culprit" in terms of inflexibility, often not allowing even constructive re-inventions of the projects to take place. But the prevailing impression among the Brazilian governors, and agency managers and staff, was that the projects were difficult to change. Even when the Bank or SUDENE were receptive, they said, obtaining permission for such changes placed burdensome demands on their scarce time and political capital, and resulted in the loss of precious implementation time. Sometimes, however, agency managers or technicians themselves turned down gubernatorial requests to which they did not want to accede, by pointing to the Bank or SUDENE as an excuse. Though their reasons for denying the governors' requests may have been justified, the habit of pointing to the Bank and SUDENE as the "culprit" simply added to the governors' impressions that the projects were not easy arenas for acting out their development visions. Even though the Brazilians and the Bank had successfully "sold" the second-generation projects to the region's governors in the mid-1980s, then, their enthusiasm and commitment waned considerably within a few years.

2.74 The demands made by the "good" governors on their technocrats often led to better results than those produced even by the most serious technocrats, when left to their own devices. The governors did not necessarily have better approaches in mind than the technocrats. Rather, the constraints and pressures under which governors operated caused them, at their best, to demand performance from the agencies under their control in a way that the institutional environment of the projects did not. The "good meddling" merits attention, furthermore, because the governors mobilized additional resources if they could re-fashion a project to their liking--an unforeseen and

highly desirable outcome, particularly in the present era of continued fiscal crisis in Brazil. The rest of this section discusses how and why the support of governors changed project design. The following two chapters treat the mobilization of additional resources.

2.75 When supportive and demanding governors were in the wings of project success, their desire to change the project took four forms: (1) they wanted to shorten the time the projects took to be implemented, and hence the nature of its tasks, so that it could "produce results" within their four-year mandates; (2) they wanted to "massify" the project--to broaden its reach in terms of numbers of beneficiaries, and (3) to narrow down its actions to a single activity, a single organizing logic, or a narrower or different geographic area; and (4) they gravitated to project activities that addressed problems perceived as urgent by a large number of public officials and constituents--drought emergencies, clamors by the rural population for drinking water, widespread concern about epidemics of crop disease that threatened to decimate an important crop; if the project as designed didn't focus exclusively on such a widely felt need, they tried to re-fashion it so that it would.

2.76 Four years vs. more. The first generation of Northeast projects was meant to be carried out over a period of five years, but took up to nine years to be completed and still had unexpended balances of 41% of appraised expenditures at project completion (Table 9). As a result, the Bank lengthened the implementation period for the second generation of projects to eight-and-a-half years, with a justification that seemed eminently reasonable: the very difficulties of the institutional and economic context made it unrealistic to expect more timely execution, and the broader "institution-building" goals of the rural development projects required more patience.<sup>39/</sup> Given this experience, one would think that the shortened four-year horizons of the governors would result in more problems. But shortening the time period removed one of the major obstacles to getting projects executed on time--the lack of political support and enthusiasm. This shortening could also improve the project's quality and--by reducing the delays that are chronic to the implementation of such projects--keep costs down.

2.77 Short is not always better than long, of course, and can displace a "more sensible" longer-maturing approach. Political pressures to get things done rapidly and conspicuously may cause waste and foolish corner-cutting, undermining more "serious" long-term efforts. But in the cases presented below, a shorter-term solution was substituted for a longer-term approach and turned out to be better. By tailoring the project cycle to the political cycle, and offering technically valid short-maturing alternatives, projects can increase the incidence of the "good" kind of political support. This is exactly what the "loyal" technocrats did in the better-performing cases, when forced and enticed to do so with "tough love" from their governors.

2.78 A shorter time period, in sum, elicited the support and the innovative problem-solving energy that longer, more "understanding" time periods did not. Though projects with lots of time seemed to make good sense because of the sheer difficulties of getting things done and learning in an environment like Northeast Brazil, the longer time periods brought a different set of problems.

2.79 Fear of failure. Dynamic agency managers themselves felt pressed to produce rapidly, whether or not their governors were urging them to do so, simply out of a strong dedication to their

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<sup>39/</sup> See, e.g., WB (6/14/85).

work. They commonly believed that their own tenure would be shorter than the life of the project, that political and professional interest in what they were doing was fickle, and that their project could therefore not afford to be painted with the brush of delays, murkiness, and insignificance. Within the second-generation program, the state of Bahia's agrarian-reform and settlement activities provide a telling illustration.

2.80 Two kinds of deadlines hung over the heads of the managers of project agencies carrying out agrarian reform. First, the agricultural calendar dictated that if the project missed the beginning of the planting season in providing land, infrastructure, credit, or inputs, a whole year would be lost. Second, these managers felt that the political climate around agrarian reform, which had suddenly turned sympathetic, would not last that way for very long. "We figured we had only a year or two," they said, "before the axe would fall." These fears had just as energizing and transforming an effect on the way the projects were implemented as did the four-year horizons of the governors discussed above.

2.81 Not meeting the deadline of the planting season would mean that the newly settled land beneficiaries would have no food to eat, let alone income from selling their produce. This would require spending scarce agrarian-reform funding on transfer payments for the newly-settled farmers, mainly in the form of food subsidies. Subsidizing the new settlers this way, in turn, would sully the reputation of the reform as a "welfare" measure rather than a "productive" one--adding to the ammunition of those who argued against such programs.<sup>40/</sup> More generally, the temporarily sympathetic climate for agrarian reform kept agency managers on a short tether in terms of expropriating and parcelling the land, and getting the beneficiaries settled into shelter and producing. This resulted not only from the sense of impending termination of the opportunity for reform, but from the difficulty of enforcing the law in a place like rural Northeast Brazil, even during politically sympathetic times. Legally-expropriated landowners, as well as large land-grabbers, harassed and intimidated the new claimants to the land, often with the backing of local authorities and even when the law was clearly on the side of the new settlers.<sup>41/</sup> If the new owners were conspicuously settled on demarcated plots, living in houses they had built, and already planting, these extra-legal challenges from powerful operators were less likely to occur or be successful.

2.82 In the course of trying to act quickly, agency managers ended up reducing the "standards" of settlement professionals and, at the same time, improving significantly the effectiveness of these projects. Instead of putting everything into place, as is the typical practice, before the new owners are settled--roads, schools, health centers, houses--the Bahians gave first priority to "getting production going." This meant leaving education and health to a later stage, and not providing the house itself but, rather, only credit and sometimes materials for "self-help housed" to be built by the

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40/ Schmitz (1990:18) points to an equally unsympathetic outside environment in explaining the high standards of the Brazilian informatics agency--the Special Secretariat for Informatics (SEI). He attributes the unusual lack of corruption in that agency--remarkable for an agency with such "rent-seeking" opportunities--to the unpopularity in Brazil of informatics policy, and the resulting feeling by SEI officials that they were constantly on trial and could ill afford to be seen as corrupt.

41/ This happened even with the Bank-funded Alto Turf colonization project in western Maranhão, when large squatters, with the backing of the state, would not recognize the federal government's title to the land--a problem that plagued that project for many years.

settler once he was on the land and often after he planted a first season's crops. Many of the new settlers therefore lived in tents for several months after moving to their new plots. The fear of the deadlines also meant postponing the time-consuming permanent demarcation of the lots until later, relying initially on a rustic and temporary demarcation using rope and stakes, to which the land recipients agreed, and in which they participated. The deadlines also caused agency managers to hold off their staffs from trying to organize settlers to farm part of their lands collectively--a common and time-consuming approach of agricultural professionals to small farmers throughout Latin America.

2.83 To those familiar with the criticisms of prevailing approaches to land settlement, these changes would seem to be obviously desirable and cost-reducing.<sup>42/</sup> Settlement has gained a reputation for being unacceptably costly, and difficult to carry out because of the heavy burden placed on state agencies to come up with a set of highly coordinated and timely actions. But the professionals carrying out land-settlement programs have often resisted the more modest and less centralized approaches illustrated by the Bahian story--just as road engineers have resisted reducing construction standards for low-volume rural roads.

2.84 The penalties of the agricultural and "political" deadlines, in sum, pushed the highly committed agency managers to move fast. These deadlines were just as effective as the fixed terms of the governors in eliciting more expeditious project execution and better approaches to designing projects and carrying them out. The deadlines, rather than a pre-existing project design, also dictated the order in which things should be done--what should come first and what should be given second priority or even eliminated. The results, in certain ways, were even more consistent with the goals of the program than the appraised projects themselves--to the extent that the "pressured" result reduced the financial and administrative burden on the state, and was more likely to be carried through to an income-producing conclusion for the settler than was the existing approach. These kinds of relentless pacing devices arising from outside the project were a common theme in other stories of good performance.

2.85 **Massification.** The desire of "the good governors" to do things in shorter time periods and narrow them down acted together with their equally strong desire to reach large numbers of constituents--to "deliver," through the projects, to a large constituency. In technocratic terms, this political message got translated into the term "massify"--to do a project in a way that would reach large numbers of people. It also could be seen as another way of talking about cost-effective delivery of public services, since broader coverage could only be achieved by reducing unit costs. "Massify" was a word particularly heard in Pernambuco around the attempts to open up credit access to small farmers, and in Sergipe around the governor's emphasis on rural water.

2.86 The new interest of state governors in "massifiable results," no doubt, was influenced by the Brazilian move toward democratization in the 1980s. It was also a function of the steady decline of the power of landed elites, whose near-feudal relations with their tenants enabled politicians to rely on them (the landed) to deliver large blocks of votes. With democratization, candidates for state and local office increasingly had to convince large numbers of constituents, rather than only a handful of

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<sup>42/</sup> Most of them are recommended in the Bank's 1985 review of land settlement projects (WB 5/1/85).

rural elites, to vote for them.<sup>43/</sup> The desire of politicians to deliver to large numbers of their constituents would, at first glance, seem perfectly compatible with the goal of the Northeast projects to reduce poverty and increase the productivity of small farmers in cost-effective ways. But "reaching large numbers of people" went across the grain of the projects in two ways--(1) their area concentration and (2) the professionalism of the managers and staff.

**2.87** The Northeast projects were grounded in the concept of area development, inspired by the growth-pole view of regional planning in the 1960s. Area development required the selection of a certain part of a state that seemed to have more potential for growth than others, as well as a concentration of small and landless farmers. The agricultural-production focus of the projects, moreover, meant concentrating attention mainly on those who managed farms and were capable of improving their productivity. This excluded those who owned no land, representing a majority of the rural population in many Northeast states.<sup>44/</sup> The second generation of projects was less inclusive of the poorest than the first because it eliminated (1) credit for operating capital (as opposed to longer-term investment credit), which tenant farmers had been able to obtain under the first-generation projects, (2) social services (health and education), and (3) public goods (roads, electrification)--all of which reached a larger population than just those managing farms. This greater exclusivity is reflected in the much smaller role of indirect beneficiaries as a percentage of direct beneficiaries in the second-generation projects--20% as compared to 92% in the first-generation projects.<sup>45/</sup> Most Bank staff did not view the PAPP projects as less targeted on the poor, pointing to certain new components of the program as designed specifically to reach landless and near-landless farmers--namely, the community-participation component and the regionwide land-tenure project.

**2.88** From the production-oriented point of view, the exclusions of the second-generation projects made sense. From a political point of view, however, they made for reduced political appeal. Even in the more inclusive first-generation projects, the appraised number of direct beneficiaries represented only 5% of the rural population of the states, and 3% of their total population (Table 11). Doubling those percentages to include indirect beneficiaries makes them 10% and 6%, respectively, still not high from a political point of view.<sup>46/</sup> The second generation, in

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43/ Melo & Moura (1990) describe how this same transformation affected the design of the Bank-funded urban development project in the state capital of Pernambuco, Recife. The mayors of the municipalities constituting the greater Recife region pressured project management to change the project in a way that would respond first to the demands of the most organized and vocal squatter groups. The increasing participation of legislative bodies (municipal and state) in approving large projects like this one also channeled more constituency-based concerns into project design.

44/ For example, 65% of rural producers owned no land in Pará, 60% in Ceará, and 83% in Maranhão, where the percentage was highest (WB 5/26/87d, 9/26/86b, and 5/26/87c, respectively).

45/ Appraised direct beneficiaries seemed to include mainly farmers receiving agricultural extension and credit. The figures on indirect beneficiaries do not appear in the tables because of considerable problems of inconsistency in their reporting in the appraisal results, double-counting of indirect and direct, and uncertainty about how. They were estimates. They are referred to here only as a rough indication of the expected impact of the projects from a politician's point of view.

46/ For purposes of this calculation, the number of beneficiary families was multiplied by five to get an estimate comparable to state population figures. The number of actual direct beneficiaries in the first-generation projects was slightly more than that projected (104% of appraised, Table 7) but appraised figures were used here in order to make comparisons to the second-generation projects, for which actual data are not yet available. Appraisal figures are also more indicative of the "political" significance of a project at its inception.

contrast, promised to reach a larger percentage of the state's population than the first--more than doubling the coverage of a state's physical area from an average of 23% under the first-generation to 56% under the second (Table 11), and more than doubling the average number of direct-beneficiary families from 23,000 to 58,000 (Table 6). But that still was not "massified" from a political point of view: appraised direct beneficiaries of the PAPP projects still represented only 16% of a state's rural population and 8% of its total population.<sup>47/</sup> Even if all of the rural population of the project areas were included among their beneficiaries--given the public-goodness of some of the investments--this would have increased the "political constituency" of the projects to only 28% of a state's rural population under the first-generation projects and, more significantly, 53% under the second (Table 11). Under the second generation, however, the public-goodness of the projects declined significantly because of the exclusion of infrastructure, health, and education.

2.89 From an exclusively political perspective, then, area development limited the number of people reached by a project in three ways: (1) the limitation to the inhabitants of a particular area of the state, (2) the limitation to those within the project area who had secure and collaterizable access to land or, another way of saying the same thing, (3) the concentration on private-good-like services--credit, extension, irrigation, input supplies, land-title regularization--as opposed to public-good-like activities like health, education, drinking water, roads, electrification. Though all of these limitations were justifiable on developmental grounds, they also reduced the projects' potential for "massifiability."

2.90 This perspective helps explain the popularity of rural water in the second generation of Northeast projects, among technocrats as well as governors (paras. 2.23, 2.26-2.27). In principle, rural water supply could benefit everyone--landed or not--in contrast to the agricultural production services around which the second-generation projects were built. As evidence of this greater political inclusiveness, rural water was the component that most commonly spilled outside the project area into other parts of the state--driven by a combination of a governor's support and willingness to find additional funding to extend the program.

2.91 A similar explanation can be given for the popularity of the short-term credit programs for landless farmers--CAP/CEP.<sup>48/</sup> Though this component amounted to a small percentage of the total financing of the Northeast projects (and the Bank would not fund it), it was among the most popular with beneficiaries and project managers and staff, who worked hard to raise more funds for it. Though credit was a private good, unlike water, the short-termness of the CAP/CEP credits and the institutional setup of the program outside the formal banking system made it possible for poorer farmers without collateral to have access. This promised to broaden the "political" reach of the project substantially, and extended it further down in the income distribution.

2.92 Finally, the concern for "massifiability" and the distinction between private and public goods help explain the preference expressed by many Brazilian commentators on the first-generation projects for the health, education, roads, rural-electrification and drinking-water components which,

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<sup>47/</sup> Indirect beneficiaries, estimated at 20% of direct beneficiaries, would increase the percentages in the text to 19% and 10% respectively--still not particularly high.

<sup>48/</sup> Compra Antecipada da Produção (Advance Production Purchase) and Compra dos Excedentes da Produção (Purchase of Production Surpluses).

they said, "worked better."<sup>49/</sup> The consistency of such judgments was surprising given that (1) these components, like the CAP/CEP credits, represented insignificant shares of total project funding, except for roads--for health, 4% appraised and 3% actual (which also included some expenditures for drinking water systems), and for education 5% appraised and 6% actual (Table 8); (2) supervision reports consistently portrayed the health and education components as riddled with trouble; (3) drinking water was not even an "official" component of the first-generation projects, minor expenditures on it being embedded in health and other components;<sup>50/</sup> and (4) rural roads, though significant in the first-generation projects (20% appraised and 19% actual), were excluded from the second generation for the reasons outlined in para. 1.30.

2.93 Though there were various reasons why the results of health, education, roads, and electrification stood out over the agricultural-production components, it was clear that participants and other observers were impressed with the reaching of whole communities by these investments. Even though the gains made in health and education were usually not sustained by the state agencies, as chronically attested to in supervision reports, this did not seem to sully the image of strong community-wide impacts. Though health, education, and road investments might not be sustained or maintained, in short, they represented a vision worth fighting for--to politicians and technocrats alike.

2.94 Even if an area development project limited the number of constituents reached directly, why would that necessarily reduce a governor's interest in supporting it? After all, securing a large well-funded project from the World Bank was a political coup in Northeast Brazil, and certainly better than no project at all--even if it wasn't designed to garner as many votes as one would like. Standing behind a project of this nature, however, was not without cost to a governor. He had to turn down the angry demands of mayors just outside the project-area boundaries to be included in the project area--a politically costly denial, especially when it involved mayors who had loyally supported one's election. (Because of this difficulty, the "technically" defined project-area boundaries often grew quite a bit during the appraisal period and even during implementation.) He had to turn down the requests of his loyal cronies to employ their unqualified friends and relatives in the project unit. (As one state secretary said, "the Bank project was my biggest headache, because the higher salaries of the project unit attracted job requests like flies. If I didn't tell the project unit to hire them, I lost their votes; if I did, I undermined the project.") He had to turn down the requests of politically important landowners to have dedicated staff fired or transferred because they were "upsetting the power structure" in a region. He had to turn away the requests of contractor friends for special privileges in bidding. The managers and staff of the better-performing projects always spoke reverentially of those governors and state secretaries who protected them from these kinds of interventions. Though supporting a World Bank project could be politically costly to a governor, it

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<sup>49/</sup> Though the Bank financed rural electrification in only one project, Ibiapaba in Ceará, some states obtained funding from other sources for rural electrification during the period of project implementation.

<sup>50/</sup> It was not possible to separate out drinking water-supply expenditures from the other expenditures of the "water resources" (5%) and "health" (5%) components of POLONORDESTE, as noted in Table 8A. Drinking-water supply was included in "water-resources," in Pernambuco, Bahia I, Bahia II--and in "health" in Maranhão, Ceará, Rio Grande do Norte, Paraíba, Sergipe. For a breakdown of appraised expenditures within the "water-resources" component of the second-generation projects, see Table 8C.

was worth it if the political returns were also high--as they promised to be with "massifiable" actions. When governors "bought" the projects, then, they often did so only if they could massify them.

2.95 Governors who could not massify their projects, or were not interested in using them to achieve broad impacts, often used them for other purposes. A common one was to use project financing to fund the ongoing activities of state agencies, particularly the extension service. In this less constructive scenario, governors saw the projects as relieving their fiscal problems--regardless of what the projects actually did. When governors viewed the projects in this less entrepreneurial way, the projects tended to lapse more and more from their developmental purpose. The governor, happy to at least have his fiscal worries reduced, was not interested in riding herd on the project agencies to perform well. It was this riding herd that helped spur good performance in many of the better-performing cases reviewed here.

2.96 "Massifiability," finally, should not be confused with a large number of components--which this review and previous ones argue against. The projects for which the term was most used, after all, were those that focused most on a single component--water in Sergipe and credit in Pernambuco. Nor is area development necessarily undesirable because it is not massifiable. Rather, in order to draw the support of "good" governors, projects will have to appeal to these leaders as vehicles for realizing their political goals. Massifiability of a single component across a large political constituency is only one way of doing this; concentration on public-good-like investments, rather than private goods like agricultural production services, is another; and choosing a region for "area development" that contains a significant percentage of a politician's political constituency--or an important segment of that constituency--is yet another.

2.97 Doing the right thing. There was a second, and more indirect way, in which the area development projects were incompatible with the political desire to reach the largest number of constituents possible. "Reaching large numbers," or developing a service-delivery model that promises to do so, would seem to be an obvious goal of area development projects like the Northeast ones. But the professionalism of even the most serious and dedicated technicians produced a style of operating that often conflicted directly with that goal.

2.98 The professionals, understandably, wanted to do things "right." Road engineers wanted to build roads wider than expected traffic volumes warranted, because that's how roads were "supposed" to be built and because you wanted to have "sufficient" capacity in place if and when the larger volume of traffic materialized. Irrigation engineers wanted to do large irrigation projects rather than small ones which, in comparison, seemed piecemeal and insignificant. This kind of "misplaced" or uneconomic professionalism is usually attributed to engineers, or to those without distributional concerns. But it is found broadly among professionals of various fields and various political stripes. Project units working on land settlement, for example, insisted on doing settlement the "right" way--which was, as discussed above, too costly, too demanding of the state, and subject to long delays. Field staff working on community water projects in Piauif wanted to stay with a community for three years before moving onto the next one--in order to make sure that the water-using association was so good that maintenance and operation would be guaranteed. Likewise, the extension service wanted to work in a few villages intensively, rather than many, to make sure it could show some impact on yields.

2.99 Whereas the technocrats were "right" in not wanting to dilute their model over too many farmers or communities, there was nothing about their professionalism that forced them to change the model--namely, to search for an approach that could reach large numbers and still have an impact within a reasonable period of time. Doing things "right" professionally meant not worrying about these issues, or leaving them to a second plane. Though the technocrats might have had the knowledge and the dedication to do things differently--and though economists watched over the birth of the Northeast projects like hawks--this did not translate into an environment of pressures to "economize" or "maximize within constraints" the way the governors' pressures did.

2.100 Governors and other elected leaders are often portrayed as making projects more costly than they should be and undermining their quality--as not allowing the technocrats, in other words, to "do the right thing." But it turns out that "the right thing," from an economic point of view, does not always come naturally in the technocratic world--even when some of the technocrats are economists--because there's no strong push to do it. Though it might seem difficult to design projects in a way that would elicit the support and protections of "good" governors, the discussion so far provides a few simple and obvious suggestions: (1) design projects, or project phases, to coincide with the four-year time span of a governorship, (2) satisfy the desire of supportive governors to obtain visible "results" in that time period, and (3) facilitate the desire of powerful political supporters to organize projects around a single "signature" activity.

### III. UNEXPECTED FINANCE

3.01 During the entire period of implementation of the Northeast projects, Brazil was afflicted with increasing problems of inflation, debt, and fiscal austerity. Inflation ranged from 30% to 80% in the 1970s and early 1980s, and to three digits thereafter, when the robust growth of the earlier period turned into the prolonged stagnation and debt problems of the 1980s. The Northeast projects suffered throughout the entire period from delays in the transfer of federal counterpart funding to the states--accounting for 65% of the funding committed to the first-generation projects and 52% of the second (Table 6). When funds finally arrived, they were often substantially less than programmed for--either because of budget-trimming by the executive or the legislature, or because inflation had eroded their value. In recognition of Brazil's aggravated problems of external debt, the Bank raised its share of the financing in all its Brazilian projects--in the Northeast projects, from 35% under the first generation to 47% under the second. The idea of requiring counterpart contributions from the state governments was never raised because fiscal decentralization was not an issue of concern to the central government or the Bank.

3.02 Given this darkening economic and fiscal picture, it is surprising to find that many of the episodes of better performance involved increased mobilization of resources--outside the project, and beyond those expected at appraisal. These efforts to raise additional funds were often paired with successful efforts to reduce costs. Also surprising, the unanticipated resource mobilization often occurred at the municipal rather than state level, spearheaded by mayors and municipal councils. Like local government in much of Latin America, Brazilian municipios are typically portrayed as fiscally deprived, administratively inadequate, clientelistic, and corrupt. The per-capita transfers they receive from the federal government are low, their authority to raise their own revenues is limited, and it is politically costly for them to exercise the revenue-raising authority they do have (Mahar &

Dillinger 1983, Silveira 1989). For all these reasons, municipal governments hardly appeared in the design of the Northeast projects.<sup>51/</sup>

**3.03** When donors design rural-development and other projects, they take finance as a constant or an "independent variable"--something that can "cause" a project but cannot be its effect. Financing or commitments to it are arranged for before the project gets started, and are not meant to be elicited by the process of implementation itself. This seems sensible, in that it would be difficult for a donor to elicit matching finance from a recipient after the donor has delivered a handsome package of project financing. But in the cases cited here, implementation itself created incentives that caused governors, mayors, public agencies, and private individuals to want to contribute additional resource.

**3.04** The signals that these cases give off about resource mobilization are important not only because the times have been fiscally austere, but because the cases reveal opportunities for local financing that often go unrecognized. Though these opportunities may be familiar to designers of urban development projects in rural areas--the Bank's intermediate-cities projects are a good example they tend to be ignored in rural development projects. They merit scrutiny for the lessons they provide about projects, rural financial institutions, and public finance in general.

**3.05** The mobilization of additional resources took six forms--those of which involved finance, described in this chapter, and those of which involved land, described in the following chapter. With respect to the mobilization of finance, three types of cases stand out:

**3.06** (1) Agency managers or interested governors lobbied for additional funding from federal ministries and development finance institutions, diverted money from other state programs, or utilized returns gained from investing the cash balances of state agencies in the money market. They sought the extra funds not only to make up for shortfalls or delays in receiving counterpart funding, but also to expand a certain component beyond what had been planned for at appraisal, or to fund an activity that the Bank would not. Some of these cases have been mentioned in Chapter 2 and will not be discussed further here.

**3.07** (2) Some agency managers or governors promoted the mobilization of savings through banks as a way of creating capital and operational funds for lending to small farmers. This took place outside the credit mechanism of the Bank-funded projects, and at a time when the credit component of those projects was hardly working at all--mainly because of farmers' fear of taking loans with full indexing (half of the loan capital was forgiven). In addition, these programs linked deposit mobilization to small-farmer credit in a way that caused bank managers to see lending to small farmers as "good business"--an unusual reversal of the typical situation.

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<sup>51/</sup> The community associations set up under the APCR component largely bypassed existing municipal government and went "directly to the people"--farmer associations, rural labor unions, and ad hoc municipio-level councils. Municipal government authorities, however, were often represented on the latter councils; sometimes, dynamic mayors went out of their way to link up to project resources, and sometimes project staff sought them out.

3.08 (3) When state governments offered matching funds, mayors typically cajoled their better-off landholding constituents to make "off-the-books" contributions to local works investments--in the form of right-of-way for road-building, fencing for the right of way, cement and other materials. In addition, these financing mechanisms subjected state agencies themselves to demands for accountable behavior because the municipios wanted the projects done fast, at low cost, and suited to their constituents' needs. That municipal government could induce state agencies to perform better is just the opposite of the typical portrayal of local government as less adequate than the more "technocratic" state agencies.

3.09 The varying forms of resource mobilization described here and in the next chapter are in some ways more different than alike, but the factors that triggered them are surprisingly similar. The following presentations of the cases stresses this structure of triggering factors which, in addition, were not usually present in the typical project environment. Briefly, those who were to benefit from the project's investments faced strong incentives to come up with part of the resources on their own--whether they were direct beneficiaries, politicians and municipal governments, or local associations. Their role in providing contributions, in turn, brought them into the project environment as demanders of accountable behavior from the institutions carrying out the project.

3.10 This chapter presents the cases of (1) "informal" financing at the municipal level of state-funded works projects, and (2) rural savings mobilization, as linked to the expansion of small-farmer credit. Because the remaining cases relate to land, they are presented together in the chapter that follows.

#### Raising taxes off the books

3.11 Prior to the Bank's first project in Bahia, the state road fund (BNDES/FERMIN) offered loans to municipal governments for road improvements and other local works projects. To receive such a loan, the municipal council had to pass an ordinance giving the lender--the national development bank (BNDES)--first claim on its future receipts from the federal government for repayment of the loan. Though a matching contribution to the BNDES loans was not required of the municipalities, the requirement that they mortgage their future receipts was a rigorous one--especially given that such local investments were usually financed out of grant funds from the states or through projects.

3.12 The rigorous payback conditions of the BNDES/FERMIN loans caused the municipalities to work hard to reduce the cost of their works projects. They did this partly by pressuring local elites into making contributions in kind--materials, donating the right of way for a road, not challenging eminent-domain proceedings (a common problem), clearing the right of way if it were on one's own property, donating and putting up the fencing oneself (to keep cattle off the road). (These latter items are customarily financed and carried out by the state agency in charge of the project.) Relying partly on their political and personal relationships with their fellow local elites, the mayors were actually collecting a "betterment levy" in an informal way, which was easier and faster than enacting and collecting a formal betterment or user charge. In that this informal levy fell exclusively on the better-off, moreover, its incidence was probably less distributionally regressive than the formal tax system.

3.13 The collateral requirements of the BNDES, together with the unusual structure of the contracting relationship between the municipalities and the state road-building agency, created distinct

pressures on the road agency to perform well. The municipalities had customarily "received" works projects from the state government and the road agency. But under the BNDES program, they took their loan funds and contracted the road agency to design and carry out a project of their choosing. Always worried about the future central-government transfers they were mortgaging with these loans, the municipalities would complain vigorously to the road-building agency when they thought the costs and the standards were unnecessarily high, or the pace of construction too slow. During the period this fund operated, moreover, a significant share of the Bahian road agency's budget came from these contracts with the municipalities, which paid the agency only after the private contractors were paid. This gave the road agency good reason to be responsive to the municipalities' concerns about costs, appropriate standards, and timely implementation.

3.14 The professional culture of road-building engineers, public and private, has tended to produce standards for roads that are often unnecessarily high--or, at the least, do not show concern for maximizing the impact of a given investment. But the financing and contracting mechanism of the BNDES/FERMIN fund made it no longer in the interest of the road-building agency to go along with private contractors in using high standards, being sloppy about the quality of construction, or allowing delay to overtake the pace of work. By making this way of doing business costly to the road agency, the structure of the road fund differentiated the interests of the public agency from those of the private contractors. If it did not perform well, the public agency could now lose contracts from the municipalities, be paid late by them or not at all or, at the least, be subject to constant harassment by them.

3.15 Many mayors preferred the BNDES/FERMIN loan fund to a parallel grant fund offered by the state for local works projects. The grant fund was more typical of the way works projects were financed and carried out, including those of the Northeast projects. Though the grant fund did not require that local governments mortgage their future federal transfers, the mayors nevertheless felt that the "transactions costs" of obtaining this "free" funding were a distinct disadvantage. They wanted the work completed well before the end of their term of office, and therefore had to spend their time and political capital lobbying in the state capital to obtain the funding. Even if the lobbying was successful, the mayors were never certain when the funds would be received--which in itself required further lobbying. The BNDES loan fund, though more costly in financial terms, was less costly in terms of these transactions costs, and produced more rapid results. The criteria for obtaining the funds were "technical" rather than "political," known to everyone, and consistently applied.<sup>52/</sup>

3.16 Given the pressures for performance inherent in the structure of the BNDES/FERMIN loan fund, it is not surprising that Bahia's road-building agency gained the best reputation for getting things done and for honesty during the 1973-1983 period, when the fund was operating. When the fund terminated and rural-road financing in the state reverted to its previous grant-funded form, the road-building agency suffered a remarkable fall from grace--as reflected in the complaints about its performance under the Bank-funded project, which started in the early 1980s. Looked at over a long

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52/ Ferguson (1990:21-25) describes similarly salutary effects from the introduction of such a loan fund (US\$150 million), with World Bank funding, to a municipio in the state of Paraná in southern Brazil (PRAM--Program of Municipal Action)--namely, (1) matching contributions at the local level, (2) economic rather than political criteria for choosing and designing municipal investments, and (3) improved and lower-cost performance by public agencies.

enough period, the history of many public agencies reveals a similar cycle of episodes of excellent performance followed by poor performance. These falls from grace are hard to explain because the agency seemed to have reached maturity in a previous period. The BNDES/FERMIN story suggests an explanation that points to the organization's environment--the incentives and pressures built into the design of the road fund, and their disappearance in a subsequent period.

3.17 The incentives and pressures with which the road fund surrounded the road agency and the municipalities can reduce considerably the burden placed on formal monitoring to deal with problems of cost, delay, inappropriate standards or materials, and plain wrongdoing. The road fund, in effect, shifted some of this burden to outside parties--the municipalities--who didn't even have to be paid to do it because it was very much in their interest, and who could identify possible savings in a way that was difficult to do in a formal appraisal process. Shifting part of the burden of monitoring this way also relieves a donor like the Bank of the heavy "educational" task of convincing reluctant professionals to reduce standards to more appropriate levels, and to keep costs down. This effort occupied much of the time of Bank professionals in the infrastructure sectors, often to no avail.

#### Linking credit to finance

3.18 A second category of cases involving resource mobilization had to do with the financing of agricultural credit. This section presents the case of Pernambuco, which exemplifies the various forms that these initiatives took. In Pernambuco, the credit-finance initiatives also involved campaigns of rural bank branches to increase their deposits, and the linking of this effort to the expansion of small-farmer credit. Though these initiatives were not carried out formally under the Bank-funded projects, they involved the same bureaucratic actors, served the same ends, and hence inevitably overlapped with the projects. They also represent a striking example of the way rural savings can be mobilized and applied to small-farmer agriculture.

3.19 The literature on small-farmer credit programs and rural financial systems has criticized the exclusive emphasis of donors and governments on providing credit to the neglect of savings mobilization (e.g., von Pischke *et al* 1983). Credit policies in countries like Brazil have typically required banks to lend to small farmers at subsidized rates, or central banks have provided them with capital or attractive rediscounting facilities to do so. This happened in both phases of the Northeast projects, where credit provided by the World Bank or the Brazilian Central Bank accounted for the largest single share of project financing in both generations of projects--23% and 30% respectively--and was both times among the most problematic components (Table 8A). Credit disbursements under the first-generation projects were only 50% of expected--the lowest disbursement percentage of all the components--and compared to an average rate of disbursement at project completion of 74% (Table 8). (The land-related component was also only 50% disbursed, but accounted for only 11% of appraised costs.) In the second-generation projects, slow credit disbursement rates were due also to farmer apprehension about taking the medium-term project credit with full indexing (according to a general price index) in an environment of near-hyper inflation--even though the indexing was applied to only 50% of the loan capital, the rest being treated as a grant.

3.20 In the story of mobilization of rural deposits told below, branch managers sought out rural savings as a basis for their lending. Even more unusual, their interest in mobilizing deposits provided a strong incentive to lend to small farmers--as explained momentarily. This created the conditions for a more sustained and genuine opening of the financial system to small-farmer

borrowers than that under the Bank-funded projects; the latter provided funding to the participating banks for lending to small farmers, but the branch managers still had to be cajoled into doing so. The deposit-and-credit stories also reveal the potential for reversing the patterns of investment typical of regional and national banks, in which deposits from rural areas are siphoned off to urban areas for investment, or completely outside the region.

3.21 For more than ten years, Brazil's high rate of inflation, together with the Central Bank's provision of money-market-type instruments with high liquidity and reasonable real returns, had made it possible for banks to earn handsome returns on their short-term deposits--particularly sight deposits, which are not indexed and bear no interest.<sup>53/</sup> With inflation running at roughly 1% a day by the late 1980s, for example, banks could earn slightly more than that by investing their sight deposits in one of the most popular of these instruments--the overnight"--or in lending for commercial credit with full indexing and at 30% interest per month. These opportunities, needless to say, created an environment in which banks became quite competitive in seeking out depositors.

3.22 In Pernambuco, the governor had chosen credit as his "signature activity," and his administration subsequently became known throughout the Northeast as having done the most for small-farmer credit. This took place at a time when the credit resources of the Bank-funded project were hardly moving. The finance for the credit, channeled through more than one program, came from three sources: (1) the above-mentioned increased<sup>1</sup> sight deposits of BANDEPE, the state development bank;<sup>54/</sup> (2) a new agricultural development fund, created by the governor out of the returns from BANDEPE's investment of the operating balances of all public agencies of the state (including the project unit) in the overnight market; and (3) funds from the community-participation component of PAPP partly diverted to credit for the special small-farmer interventions that were a result of Pernambuco's "reinvention" of the project.

3.23 At the same time that the overnight was generating an agricultural development fund for the state, all banks were competing in urban and rural areas for the lucrative sight deposits.

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53/ Most short-term depositors, of course, opted for the interest-bearing and indexed accounts--to name the most important, "renumerated accounts" (*contas remuneradas*), savings, and overnight. But these accounts did not provide full liquidity (30 days for savings, 24 hours for overnight), and/or required minimum balances (overnight and remunerated accounts). This left two categories of depositors for the unindexed, non-interest-bearing sight accounts: (1) small depositors who could not meet the minimum-balance and/or minimum-time-period requirements--important particularly in rural areas, and (2) larger depositors who kept a certain amount of their short-term deposits in sight accounts for liquidity and as a "price" for being treated as a good customer by the bank. (The latter was a looser version of the "compensating balances" required of borrowers by banks, particularly for loans from special credit lines with subsidized interest.) The unindexed non-interest-bearing sight deposits accounted for 20% of total deposits of Pernambuco's state development bank, BANDEPE, and for 80% of that bank's rural credit.

54/ BANDEPE drew only on its sight deposits for all rural credit because (1) minimum turnover periods for rural credit were six months, making it unfeasible to lend out the shorter-term deposits held by the bank; and (2) the interest charged on rural credit was less than the interest paid by banks on the short-term interest-bearing deposits. Of BANDEPE's sight deposits, 25% were invested in rural credit; of its total rural-credit portfolio, 80% was financed out of sight deposits, and the rest came from Central-Bank rediscount facilities and special lines of credit. Rural credit accounted for 10% of BANDEPE's total portfolio, commercial credit 30%, industrial credit 10%, and infrastructure credit 50%. (For commercial loans, rates were fully-indexed and 5% per month; for industrial and infrastructure credit, fully indexed and 6.5% and 10.5% per year, financed out of special lines from the National Development Bank, and the Central Bank through the Caixa Economica Federal. The infrastructure loans were mainly to municipalities.

BANDEPE's branches competed particularly in rural areas, given the governor's rural-credit initiative and the fact that the lower interest return on rural credit meant that sight deposits were the only profitable form of financing. As a result of this competition, BANDEPE won some of its new deposits away from other banks--mainly, the Bank of Brazil, which has a wide network of branches in rural Brazil; BANDEPE thereby came to have a larger number of branches and deposit volume in the state of Pernambuco than the Bank of Brazil, for the first time in history. Though the deposits won over from other banks did not represent a net increase in formal rural savings, the branch managers also worked hard to obtain new deposits--persuading firms, farmers, and other individuals who customarily held their cash at home or at the store to put it in the bank instead.

3.24 In order to persuade depositors to switch from other banks--or to keep cash at the bank instead of at home--BANDEPE branches had to show that they could offer better service to potential new depositors. In rural areas, one of the most valued services to small farmers was access to credit and respectful treatment. One form of this special treatment was to (1) offer loans to new rural borrowers without asking for the usual deposits the first time around, and (2) get them "hooked" thereby on BANDEPE gently suggesting upon subsequent loan requests that the borrower keep "some" cash in a sight account. Treating potential new borrowers well could also bring in new deposits from municipal governments, sometimes even the personal accounts of the mayors themselves, who were grateful for the "pro-development" role that the bank branch was playing in their municipality, and the increased business and economic activity that it was generating. Branch managers wanted to lend to small farmers more than usual, in sum, because it was good business for them, and their performance was rated on the profitability of their branch. This contrasts sharply with most agricultural-credit programs worldwide, including those of the Northeast projects, where branch managers customarily see small loans as a nuisance.

3.25 The desire to provide good service to small farmers in order to obtain their deposits is also operating among some of Brazil's agricultural cooperatives today. A recent law has allowed agricultural service coops to apply for depositor status; previously, they were not allowed to take deposits beyond requirements for forced savings. The Irecê coop, for example, has been vigorously lobbying for depositor status as a way of making membership in the coop more attractive and, at the same time, of increasing the amount of capital available to it for lending to its membership--mainly small and medium farmers. In its lobbying effort, the coop had to compete with the local branch of the Bank of Brazil--which was not happy about the prospect of the coop's obtaining depositor status, for fear of losing some of its own deposits.

3.26 Another important aspect of the Pernambuco deposit-mobilization story is that it took place within a state development banking system, rather than the longer-established, more reputable, and much larger Bank of Brazil--one of the largest agricultural banks in the world. The first generation of Northeast projects had actually bypassed the state development banks because of their shorter and more checkered histories, using instead the Bank of Brazil (and the nationwide Bank of the Northeast) as the financial agents for the credit component. Though the state development banks could not compare to the Bank of Brazil on longevity and soundness, and were more vulnerable to political meddling by governors,<sup>55/</sup> they also had to be more responsive to the developmental initiatives of a state government than would be a national institution like the Bank of Brazil. The "unresponsiveness" of the latter was frequently complained about by various state agricultural officials and Bank supervision officers. Mobilizing rural savings and investing them locally, in short, were more in character for a state development bank than a nationwide or nationwide bank. It was for all

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55/ BANDEPE itself had to first be "cleaned up" by the governor's newly appointed president of the bank, before it was possible to carry out the governor's credit initiative.

these reasons that many project managers, exasperated with the credit problems of the Northeast projects, looked beyond the projects and the banks of Brazil and the Northeast to the state banks for solutions--just as in Pernambuco.

3.27 State governments often used the state banks to bail out their deficit-ridden operations, and to distribute political patronage. But in these cases of rural deposit-mobilization, the presence of the Bank of Brazil and the Bank of the Northeast as competitors for deposits constituted a healthy check on state-bank performance. The state banks would not be able to compete deposits away from these more "serious" banks, that is, unless they showed potential depositors that they could provide services better, or at least as well. The Bank of Brazil's presence was important to the outcome of the BANDEPE story, then, but as a standard against which BANDEPE had to match up--rather than as a direct participant--and as a strong competitive presence.

3.28 The Pernambuco story also illustrates a new interest of state governments and banks in charging less subsidized interest rates for agricultural credit. For many years, the World Bank tried unsuccessfully to persuade the Brazilians against using high interest subsidies on agricultural credit; even in 1985 and 1986, when completing the agreements for the second generation of Northeast projects, the Bank gave in to a cumbersome subsidy arrangement for project credit whereby half the loan was forgiven and treated as a grant, and the rest was subject to full indexing. In Pernambuco, in contrast, the credit subsidy almost magically disappeared--though the program is too new, and the data on it too scanty, to make a final judgment. This kind of progress toward reducing the problem of highly subsidized interest rates in highly inflationary economies is striking--because (1) all levels of government resisted the reduction of agricultural credit subsidies so vigorously for so many years, and (2) state governments would seem to have more of a short-term political interest in subsidizing agricultural interest rates than the more distant central government. What drove the state's concern to charge a nearer-to-the-market interest rate for the credit, however, was its desire to preserve its new fund for agricultural credit. This would not be possible if the value of the funds generated by the overnight investments were allowed to be eroded by a negative real interest rate on lending.

3.29 The Central Bank's sharp retraction of credit lines and rediscounting facilities for agriculture in the early and mid-1980s also contributed to Pernambuco's perception of a need for the state to generate its own capital for agricultural credit. Before the retraction, subsidized Central Bank instruments had financed the lion's share (80%) of BANDEPE's rural credit, with sight deposits contributing only 20%. After the retraction, these percentages were reversed--with sight deposits now accounting for 80%. Thus fiscal and monetary austerity at the level of the central government, and the opportunity to mobilize capital within the state, both contributed to the change in attitudes about subsidized interest rates and to mobilizing resources for credit. Just as crucial to this outcome was the governor's desire to make small-farmer credit and productivity interventions a hallmark of his administration.

3.30 Finally, in comparing the "alternative" credit experiences of Pernambuco and other states to the credit component of the Northeast projects, the importance of short-term or operating credit in the state initiatives stands out. Short-term credit was eliminated from the second-generation projects in an attempt to focus the credit component more sharply on the productivity increases brought about by longer-maturing investments (as noted above in para. 2.91). Though eminently understandable, the concentration on longer-term investment credit created some other problems or, at the least,

reduced some important opportunities to mobilize credit finance and increase the productivity of small-farm agriculture:

3.31 (1) Smaller farmers, risk-averse and fearing the loss of their land to the bank, often preferred not to finance productivity-increasing investments out of bank loans but, rather, to hire themselves out as laborers to obtain the capital for such investments;<sup>56/</sup> or they chose smaller investments that they felt safe financing out of short-term credit (several of Pernambuco's "special interventions" were actually designed to break productivity or marketing bottlenecks through credit-financed investments that could be paid off within a year, like animal traction); (2) banks did not lend investment credit to tenant farmers, or small farmers without clear title, because of collateral requirements, whereas they could lend short to such farmers using crop liens for security; (3) small farmers were less resistant to full indexing on short-term loans than on longer, because of the compounding in the longer term of their anxiety that the prices received for their crop would not keep up with the index used to correct the loans; (4) the short-term loans were more compatible with attempts to raise interest rates to positive real levels through schemes to denominate repayment in kind, which were proliferating in the various Northeast states outside the framework of the project, and in which implicit positive real interest rates were readily accepted by farmers at the same time they were refusing full indexing on half their PAPP loans.

3.32 In some ways, then, short-term credit may serve the interest of productivity improvement in small-farm agriculture better than longer-term credit. This is because short-term credit (1) facilitates the kinds of productivity-increasing investments that small farmers make, or the ways in which they prefer to finance them; (2) is more compatible with the risk aversion of small farmers, particularly in unstable and high-inflation agricultural economies; (3) is more compatible with attempts to raise interest rates to positive real levels; and (4) has a special political appeal because it reaches small and landless farmers broadly.

3.33 The final results of these various attempts by the Northeast states and regional institutions to solve the problems of credit finance are clearly still not in. Questions remain as to whether these initiatives are sustainable, what repayment rates will be, whether the "implicit" interest rates will have included strong subsidy elements, and what the cost of administering these programs is.<sup>57/</sup> Regardless of these outcomes, however, the experience illustrates various incentives that

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<sup>56/</sup> Interviews and Rezende (1987:19-20).

<sup>57/</sup> The Region has reported (November 1991) that "We regret that the report continues to present the Pernambuco credit story as a positive experience of trying to establish a self-sustaining new fund for financing investments by small farmers through short-term credit. While the impact of this innovative 'signature scheme of the Governor of Pernambuco' on agricultural production is not clear, it is known that the fund is inoperative because of the farmers' failure to repay, with the result of (a) larger losses than the transparent subsidy element implicit in the scheme proposed by the Bank, (b) a further postponement of introducing a viable system for financing investments to small farmers in a highly inflationary environment, and (c) a further nourishing of the farmers' perception that credit is synonymous with grants and subsidies. We are disappointed about these developments and disagree with the suggestion of the report that this was innovative and successful. We also strongly disagree with the claim that the credit system proposed under NRD<sup>P</sup> is 'a cumbersome subsidy arrangement'. This emphasizes the episodic nature of much project experience in the Northeast.

can link small-farmer lending to rural savings and other sources of finance, and that can stimulate "better" interest rates:

3.34 (1) Strong financial incentives to branch managers to lend to small farmers (in the form of profits earned on sight deposits); (2) a financial institution linked into development energies at state and local levels, and thereby able to draw on capital and other resources hitherto untapped, (3) a forging of this link between credit and deposits in the more decentralized and developmentalist state banks in a way that also demanded good performance from them; (4) a strong state-government policy initiative favoring small-farmer credit; (5) new financing from a fund arising out of the investment of state cash balances in the overnight, and (6) a financing incentive to charge real interest rates (the desire to preserve that new loan capital). Clearly, linking small-farmer lending to savings would not always have to take this particular form.<sup>58/</sup>

3.35 Though the Bank itself financed the research that emphasized the importance of savings mobilization for the growth of rural financial institutions, the kinds of incentives listed above are largely absent in its agricultural and rural projects. This is partly because the Bank's concerns about agricultural credit, including in the Northeast projects, have focused almost exclusively on the problem of the interest-rate subsidy, perhaps to the exclusion of these other issues. Paying more attention to the deposit side, and in a way that linked it to the expansion of small-farmer credit, would seem to be at least as important--as well as contributing powerfully to a solution of the interest-rate problem without having to attack credit subsidies directly. Linking credit to deposit mobilization is also a more efficient way of getting branch managers to be more sympathetic to small-farmer lending--in contrast to the prevailing approach of requiring that they do so, making it costless to them with free capital, or "educating" them into it.

#### IV. THE QUESTION OF LAND

4.01 In addition to the two types of unexpected finance mobilization discussed in the last chapter, additional resources were frequently mobilized in the form of land:

4.02 (1) Project agencies sometimes elicited donations of land parcels from the municipios for settlement of landless farmers. In Piau and Bahia, municipal governments donated their own land or even acquired it for donation when they saw this as a way of obtaining public investments from the project--a health clinic, a school, a water system, a collective irrigation project for landless farmers. In Bahia, mayors saw the collective irrigation projects as enhancing their political prestige, as helping to reduce the burden placed by their poor constituents on the municipal budget, or as simply bringing "development" to their municipio.

4.03 (2) Project agencies also elicited the donation of private lands for collective irrigation projects, by offering the donors in exchange a share of the water to be supplied by a new tubewell--the so-called "barter investments."

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58/ A recent study of the performance of 17 financial parastatals in Kenya found that those that accepted deposits performed best, for reasons similar to those discussed here (Grosh 1988).

4.04 (3) The process of carrying out the land-regularization component of several of the projects, and of the Northeast land project, elicited the "forced donation" or "negotiated transfer" of lands--in this case, from large private landholders whose legal title was shaky, or who were seeking regularization of their title claims from the state or authorization to purchase large tracts of state land.

4.05 Most of the three types of land acquisition listed above took place at a more local level than typically occurs in agrarian-reform or land-settlement programs. Instead of agencies of the state or central government, the key actors were municipal governments, cooperatives, peasants organizing to seek out land, branch banks interested in facilitating such transfers, the regional office of a state agency. The decentralized nature of the process of search, negotiation, and acquisition of the land made land markets work better and, with a crucial assist from state agencies, more in the interests of small farmers than under the typical public land-transfer programs. What were the incentives that brought these parcels of land onto the market, and available for financed sale or donation to landless farmers? More generally, why were these acquisitions of land possible in times when land was considered to be increasingly scarce and too costly for acquisition by small farmers or by the state for transfer to them?

4.06 In addition to analyzing the three types of land mobilization listed above, this chapter closes with a discussion of two successful cooperative land-settlement schemes in Sergipe. This last category of land transfers conveys important lessons, like the other cases, about more effective ways of bringing about land redistribution and productive small-farm agriculture.

#### Municipal land donations

4.07 In contrast to the other cases of unexpected resource mobilization, the Bank played a direct role in eliciting land donations for the POLONORDESTE project in Piauif. There, the Bank insisted that the state come up with 30,000 hectares of land for redistribution before disbursement could start; a covenant in the project agreement stipulated further that no infrastructure could be built in a municipality unless land had been acquired for distribution in that municipality. To meet the 30,000 hectare goal, project staff and Bank appraisal offices offered a powerful incentive to municipal governments to contribute: they promised the mayors project-funded investments--a school, a health post, a road--if they came up with land. The municipalities donated their own lands, "persuaded" land out of the hands of owners of questionable title or of local dignitaries, or initiated processes challenging the title to a particular parcel when they knew the existing occupant's claim was not valid. As a result of this response, the project unit exceeded the 30,000-hectare requirement of the Bank by 20,000 hectares, and even met the goal before the stipulated time. Though the experience of Piauif and Maranhão with land programs cannot be extrapolated to other states with a longer history of settlement, certain similarities with the experience of other states were clear. In Bahia, for example, municipal land donations were elicited by the collective tubewell projects. The next section elaborates on that and other experiences.

#### Barter investments

4.08 In the long-settled, semi-arid Irecê region of Bahia, more recently, the Bank's role in stimulating land transfers, was indirect and not intentional. It refused to reimburse irrigation projects

for small farmers with costs higher than US\$2,000 per hectare.<sup>59/</sup> This ceiling was difficult for the project agency to meet, which was estimating costs at roughly US\$5,000 per hectare--partly because of the cost of acquiring the land.<sup>60/</sup> But project staff were keenly committed to carrying out small tubewell and riverine irrigation projects for landless farmers, as was the Irecê coop. Both staffs therefore worked hard to come up with a cost-reducing approach. "Barter investments" and municipal land donations were the result, whereby the cost of irrigation was kept down by obtaining the land "for free"--donated by the municipality or by the smallish landowner who, in return, received part of the water for starting his own irrigated farming. The burden of acquiring the land was in this way shifted from the project's shoulders to others.

**4.09** The private landowners and the municipalities contributed voluntarily because of the high value they placed on what they received from the tubewell projects. The landowners in particular received a permanent supply of irrigated water, and hence the first-time opportunity to undertake irrigated agriculture. They had not irrigated previously because (1) their cultivable acreage was not large enough to justify the investment in a tubewell; (2) in that irrigation was relatively recent in the region, having been adopted only by larger and more highly capitalized farmers, land values still reflected no more than their dryland crop potential; as a result, the value of a small or medium farm taken as collateral against a bank loan for a tubewell was not sufficient to guarantee the loan, (even though these same farmers were already receiving short- and medium-term credit), and banks therefore lent only to the more heavily capitalized farmers for irrigation; and (3) even if these better-off small and medium farmers had been able to get access to financing, they were hesitant to take on such a lumpy decision involving a large investment and a radical change in the way they produced.

**4.10** The barter investments changed these circumstances by (1) making the tubewell investment a less lumpy one for the smaller landowner; (2) allowing the landowner to finance the investment in a way that was more compatible with his asset structure--namely, by ceding a parcel of his land; and (3) reducing the transactions costs and the risks of the investment to the ceding landowner, by transferring to the assisting agencies the function of arranging for the financing and conveying information about the new techniques. The barter investments, in sum, reduced the economic and institutional threshold for irrigation to the medium and small landowners who "bartered" their land in exchange for part of a tubewell and its water--not to mention making irrigated farming a possibility for landless farmers.

**4.11** Local governments and mayors gained two distinct benefits in return for donating municipal land, or seeking out "good deals" for purchasing land parcels and donating it: (1) the political prestige of having a conspicuously verdant parcel of irrigated vegetable-growing land in their

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<sup>59/</sup> A Bank-sponsored review of per-hectare investment costs for various types of irrigation in Brazil came up with US\$1,990 per hectare for the "Northeast model" (3NEs), which seems most representative of these Irecê-type investments (WB 6/22/89). See para. 4.51 for more on the economics of irrigation investment in Brazil.

<sup>60/</sup> Though the state was carrying out a vigorous agrarian reform at this time, expropriation was not possible for this type of land acquisition because the law prohibited expropriation of parcels less than 500 hectares, and Irecê was already a region of principally small and medium holdings, and hence less affected by the reform.

semi-arid municipality, which represented "development," and (2) the relief that the project promised for the municipality's budget, as explained in the following.

**4.12** Mayors in rural towns throughout the Northeast have been increasingly besieged with requests from their poor to help them pay for expenses like prescription medicines and round-trip bus tickets to São Paulo for the males in the family to seek temporary employment in the construction industry. Because of the personalistic style of these mayors, and because of the growing number of landless farmers who have moved to the edge of the municipal capitals while continuing to work in agriculture on a contract or occasional basis, the mayors felt politically obligated to attend to these pleas, and did so on an individual basis. Dealing with poverty this way sapped their time and their spare municipal budgets, many of them felt, without providing any lasting impact or relief.

**4.13** Many of the Northeast mayors were looking for more lasting solutions to these drains on their budgets--such as (1) low-cost pharmacies run by the municipality, in some cases contracting out the growing of herbs for homeopathic medicines to groups of poor rural workers living at the edge of the city; (2) embarking on new approaches to trash collecting and recycling that would offer income-earning opportunities to these newly urban rural poor; (3) providing small plots of land to their poor for collective vegetable gardening--often for women and, in one case, for prostitutes; (4) identifying important informal-sector producers, providing them with space and technical assistance, and perhaps sponsoring trade fairs for them.

**4.14** The mayors saw the collective vegetable projects irrigated by tubewell in this same light. Even if they had to use municipal funds to acquire land parcels, they saw the land donations as an improvement in the way they were already spending municipal funds: instead of having to shell out municipal funds year in and year out for bus tickets to São Paulo to help their poor constituents earn income elsewhere, they reasoned, the expenditure on a collective plot for the same people promised to yield a self-sustaining result, which would also help develop the município itself. In general, the Northeast projects did not link up to these municipal initiatives, which usually operated outside the structure of the projects.

**4.15** The reaction of the mayors and the landowners to the "second-best" solutions of the project agency indicates that these investments were quite economically desirable. As the barter-investment deals proceeded apace, for example, more and more better-off small landowners became interested, pressured the coop and the project agency for the "chance" to donate land for a project of this nature, and were willing to accept increasingly less favorable terms on the deal--offering more acreage in return for smaller percentage shares of the water. This in itself was an indication of the high economic value of the newly irrigated cropland to them, let alone to the landless farmers. The mayors, at first skeptical of the idea of donating municipal land for the tubewell projects, ended up clamoring for their "own" tubewell projects. Once they came up with the land, they complained that the coop and the project unit were not moving quickly enough. These demands pressured the project agencies into being more accountable, and not getting bogged down by delay. For local government to play this role of inducing performance from state government--as in the case of the Bahia road fund--did not require that local government itself be technically or administratively competent.

**4.16** In Irecê, in sum, project agencies transformed the Bank's pressure to reduce the unit costs of irrigation into a "matching" incentive extended to local governments and local landowners to come up with land in exchange for tubewell projects. The matching incentive mobilized resources for

project implementation that were not foreseen at appraisal, and did so in a way that produced better results in economic terms. The lesson of the story is not simply that "decentralization is better," but that it took place in combination with the strong presence of a more centralized government entity--the World Bank, a state government, a national development bank, or another nationwide institution. This more centralized agent provided strong matching incentives, technical assistance, and often a crucial counterweight on the side of the landless farmers that enabled them to negotiate access to income-generating assets with local elites. Further lessons from the barter investments and municipal land donations emerge in the following two sections.

Agrarian reform without tears

4.17 State land authorities sympathetic to project objectives sometimes took advantage of the shaky legal position of large claimants or holders of land as a way to extract exchanges from them. The authorities agreed to legalize or not challenge the title of these landholders, or to authorize their requests to buy state land, in exchange for "donations" of a parcel of the land in question for redistribution to landless tenants on the property or from elsewhere in the region. In a small way, these negotiated transfers of land represented an informal substitute for enforcing the law that authorized expropriation--given that the political and institutional environment made formal enforcement difficult. Though these transfers did not generate the amount of land for settlement that direct expropriation and large-scale regularization of title would have, they had the advantage of being fiscally costless--they did not involve purchase or expropriation. And they did not create the adversarial environment, the political tensions, and the opposition that direct enforcement of the land law would have.

4.18 In Northeast Brazil, as well as other parts of Brazil and Latin America, large landholders often operate in violation of the law. Either they do not pay the land tax, proof of which they need to obtain bank credit, or they claim to own land for which they do not have clear title, often evicting tenants with squatters' rights protected under Brazilian land legislation. On the one hand, this kind of violation of the law is widely tolerated because of the weak enforcement power of state institutions and the collusion between large land claimants and state officials. On the other hand, this state of affairs leaves landowners somewhat vulnerable if any change were to cause the state's enforcement power to become stronger and property rights to be enforced equally.

4.19 This latter type of change is exactly what happened in the mid-1980s in Northeast Brazil. It was caused by (1) the move toward democratization, which ended the political repression of groups organizing to defend the legal rights of tenants and squatters, and initiated a new era of politics in which electoral candidates who were sympathetic to small-farmer claims started winning elections; (2) a longer-evolving consensus among "modernizing" elites in the Northeast and elsewhere that a climate in which tax evasion and disrespect for land rights were tolerated was somehow connected to the "backwardness" of Northeast agriculture and therefore incompatible with agricultural modernization; and (3) longer-term investments by the World Bank and, to a lesser extent, the Inter-American Development Bank, in building up the capacity of national and state institutions involved in mapping land, assessing land values, and regularizing title.<sup>61/</sup>

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61/ The following works analyze some of these changes: Falcão Neto (1985), Guimarães Neto (1988), Lavaredo & Pereira de Sá (1986), Muda Nordeste (1985), Sales (1988), Santos (1988), and Stepan (1988).

4.20 The institutional climate that set the stage for the negotiated land transfers, then, was a strange combination of (1) weak enforcement institutions and a tradition of disobeying the law, together with (2) a new capacity on the part of government, and a new drive, to enforce the law. Though governments were not strong enough, nor the political climate supportive enough, to apply the protections of property rights and the obligations to pay taxes to all, the climate had changed enough so that the state could cajole lawbreakers into compliance by "extra-legal" means--namely, threatening to enforce the tax law, or legitimately questioning a claim to title or to buy a large tract of state land. The landowners or claimants were amenable to these "friendly" negotiations with state authorities not only because of their fear of expropriation, in other words, but also because of the legal questionability of a variety of their own actions.

4.21 Agrarian-reform programs have been widely criticized for the uncertainty that fears of expropriation create among landowners, and the damaging effect this can have on agricultural investment and modernization. While this assessment has often been correct, particularly when the uncertainty over expropriation extended over a long period of time, it assumes incorrectly that a large majority of landowners would be inclined to invest in increasing their production or productivity and are not doing so out of uncertainty--a point returned to below. More important, this critique of the land legislation represents an incomplete description of what causes landowners to fear. Though they may well fear that they will lose their land, to which they have a legal right, they also fear that they will lose their "right" to act illegally--namely, to evade the payment of land and other taxes, and to violate the rights of others who have legal claims to the land but are less powerful. They fear that obligations and rights under the property (and tax) law will be enforced, in other words, and not just that the "right to private property" will be disregarded. This kind of dual fear has characterized the countryside of Northeast Brazil and many other places in Latin America since the 1960s, when talk began not only of agrarian reform but of tax reform, regularization of land title, and agricultural modernization.

4.22 This kind of ambiguous political and legal environment has created opportunities that are less conspicuous than the more talked-of uncertainties. Some landowners, or buyers of large tracts of land, do things legally and have nothing to fear; others do not. Some state officials collude with the evasion of taxes and violation of the land law; others do not. At some moments and in some places, the political environment favors the colluders; at others, it supports the enforcers. The political environment in Brazil of the 1980s, plus the Bank's role in strengthening the Northeast's institutional capacity to carry out the land law, brought more support for the enforcers, and tipped the balance toward them in some states--particularly Maranhão, Ceará, and Bahia; in other states, and since 1987 in general, the balance has gone in the other direction. The mixed and variable nature of this environment creates opportunities for the kinds of negotiated transfers that occurred in association with the Northeast projects.

4.23 An important aspect of the negotiated land transfers is that they were not adversarial proceedings, in contrast to many expropriation programs. Indeed, they were often carried out by state authorities who were on friendly terms with the affected large land claimants. Many state officials who favored enforcement of the land law even preferred these kinds of negotiations to expropriation precisely because of their non-conflictual nature--the same reason for which many preferred purchase to expropriation. In this sense, the existence of a feared and conflictual alternative that was disliked by both parties--expropriation--was important to their being willing to enter into a non-conflictual negotiation. When state agencies preferred the land-transfer or purchase negotiations,

moreover, it was also because they produced rapid and uncontested results--in sharp contrast to many expropriations.

4.24 The negotiated transfers--with their informality, their unpredictability, and their unique set of results from one case to the next--seem to be far from an orderly approach to land matters, let alone to the challenge of modernizing agriculture. At the least, however, it is important to understand that they represent a more accurate version of reality and its opportunities, than does the view that agriculture is being modernized in an orderly way, and that "disorder" and landowner reluctance to invest are solely the result of threats of expropriation.

4.25 Though donors like the Bank may not be able to plan for transfers of land like the ones described here, it is important to understand that the Bank's support for legality and the institutional infrastructure to carry it out has helped create a climate that is more conducive to this informal process of transfer. The Bank's institutional support to the land sector--through the state RD projects and the Northeast-wide land-tenure project--has made the states (and the central government) more technically capable of extending their regulatory reach and, in so doing, has empowered the enforcers.

4.26 Returning to the broader theme of this chapter, the negotiated transfers can also be seen as part of a series of actions in which the state unexpectedly mobilized additional resources in response to incentives emanating from the Northeast projects themselves. The negotiated transfers were innovative ways of acquiring land for small-farmer settlement without expending funds for land acquisition either through purchase or expropriation. As with the barter-investment schemes and the land donations by municipal governments, the project provided something that was not enough and that at the same time constituted a strong incentive for the project agencies and local actors to come up with the rest.

4.27 State officials and agency managers involved in the negotiated transfers or land purchases--as opposed to expropriation--expressed a liking for them in private. They were non-conflictual, they could happen fast, and they wouldn't be undone later through long drawn-out challenges in the judicial system. These same people, however, were loath to praise them or talk about them in public. If they were in favor of land reform, as many of them were, they thought the negotiated transfers and purchases were pale versions of "the real thing"--an agrarian reform--and represented an abandonment of the chances for a more frontal and "just" assault on inequity of land tenure. In a sense, moreover, the negotiated transfers couldn't really be discussed as an approach to land problems because of their grounding in illegal behavior on the part of the landowners and a kind of "blackmailing" by state authorities informed about the illegalities. At the same time, however, there was something more "civilized" about these transactions than a full-scale agrarian reform. They represented, as several officials said, "an agrarian reform without tears."

4.28 Some earlier advocates of agrarian reform for Latin America are now making a new argument against its feasibility today. Beginning with the 1960s, they say, Latin American states have threatened agrarian reform from time to time, while at the same time heavily subsidizing large landholders to put their unutilized lands into production, and intensify their production methods. This combination of carrot and stick has succeeded, in the intervening 30 years, in pushing large landholders into modernizing agriculture and increasing output and exports. The modernization of agriculture, in turn, has removed one of the strongest economic arguments of that earlier period in

support of agrarian reform--namely, that it would replace unproductive owners of the land with productive ones.<sup>62/</sup>

4.29 Though the threat of agrarian reform coupled with the heavy subsidization of large-farm production has succeeded in pushing Brazilian agriculture to expand and modernize, the response of landowners has been mixed--especially in the Northeast, where there are still many tracts of non-producing, or extensively grazed land. In addition, the statistical evidence showing Northeast agriculture over the last 30 years as stagnant in terms of increases in yield is not really consistent with the assumption of the above-mentioned literature that agriculture has "already" modernized. The million hectares of mostly "unproductive" land expropriated or recovered (through cases of faulty title) over the last five years in non-frontier areas of Ceará, Maranhão, and Bahia, are testimony to this. The identification, titling, and settlement carried out in these areas was funded by the Northeast projects.

4.30 The co-existence of non-modernized landholdings in Northeast Brazil with the modern ones accounts for the strong sympathy for agrarian reform currently encountered among many Northeast technocrats. At the least, the non-modernized sector presents possibilities for the more "gentlemanly" kinds of negotiated transfers, donations, and purchases described in this section. The rest of the chapter describes a complementary realm of possibilities for land-transfer interventions.

#### Settling the internal frontier

4.31 In the late-1970s, the Coop Thirteen and the Estância cooperative of the Tabuleiros Sul region of Sergipe carried out successful land settlement schemes for landless farmers. Though these schemes shared certain characteristics with some of the state-sponsored schemes funded through the Northeast projects, they were quite different in important ways. In acquiring and distributing lands to their members in the years immediately preceding the Bank-funded project, the Sergipe cooperatives laid the groundwork for smallholder agriculture and institutions defending smallholder interests that contributed to the project's successful functioning in the subsequent period. And they were important local actors in project implementation.

4.32 The land programs of the Sergipe coops were driven partly by the importance of a particular cash crop in making production by the new settlers viable--first tobacco, then oranges, as discussed in para. 4.39. In addition, the public sector played a quite different role than it had in the Bank-funded projects and other land settlement programs, including the highly-praised land-purchase scheme of Piauí. In contrast to many of these schemes, the land recipients (and the coops) played an important role in identifying the parcels to be acquired for redistribution, and in negotiating the terms of the deal with the seller. (This also happened with some of the collective irrigation plots in Bahia, as discussed above.) A branch manager of the Bank of Brazil with a developmental interest in the region financed the transactions and, together with the state department of agriculture, provided technical assistance to the coop and the new landowners. The willingness of the state government and

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62/ E.g., de Janvry (1989). Carter & Meshab (1990) also summarize the literature around this argument; see also Binswanger & Elgin (1988). For analyses of the Brazilian case, see Carter & Walker (1989), and Thiesenhusen & Melmed-Sanjak (1990).

the Bank of Brazil to finance and provide technical assistance for the venture was crucial to its being able to take place.

4.33 The central role of the prospective buyers and the cooperative in locating the land and negotiating the transactions kept the state at arm's length from the seller. This was important because of the possibilities for collusion inherent in purchase programs--namely, that state officials collude with the landowner in setting a price for the land that is higher than its value, or in acquiring land that is not really desirable for farming--a critique made by several observers of the Bank-funded purchase program in Piau63/ Staff of the state department of agriculture in Sergipe, in fact, praised the cooperative land-purchase scheme for the very "protection" it provided them from their own vulnerability to pressure by powerful landowners and their politician friends. "When land sellers told us to increase the price," they said, "we just shrugged our shoulders and told them to go talk to the coop--the deal was out of our hands."

4.34 Another distinction between the land schemes of the cooperatives and those of the Northeast projects was that land acquisition and distribution was a way for the cooperatives to build their membership. In order to obtain land, one had to join the coop, and this promise attracted landless farmers in the area to join. The membership concern put the coops under a self-induced pressure to perform--carrying through with the promised land transfers, the parceling, and the opening of access roads in good time. A large membership, in turn, helped coops to gain various services and subsidies from the state, which liked to use coops as conduits for public support to the smaller-farm sector.

4.35 This same kind of self-induced pressure to increase coop membership and "deliver" to it was also important in spurring the performance of the Irecê cooperative in Bahia. That cooperative aggressively sought out the barter-investment deals and the municipal land donations discussed above as a way of increasing the number of collective irrigation plots it could sponsor in the region and, hence, the number of new members. Like the Sergipe coops, moreover, the Irecê coop was better able to play this role because it was geographically and socially closer than a state agency to local politicians, landowners, and local land markets.

4.36 The lesson of the experience with the Sergipe and Irecê coops is not that cooperatives should replace the state in land settlement or other programs, or that nongovernment organizations do better than government at serving the poor. After years of support from the Brazilian state for cooperatives, after all, only a few cooperatives in Northeast Brazil became as strong as Coop Thirteen and the Irecê coop, and important actors in the development of their region. Though the Irecê and Sergipe coops were "nongovernment organizations" with local roots, moreover, their origins lay equally in the efforts of the Brazilian state over the past 40 years to extend its reach to rural areas. Central and state governments used cooperatives to create ties of political loyalty with rural elites by channeling development subsidies through them--as the founders of the Irecê coop themselves said in telling the story of their beginnings in the early 1960s. The coop successes at doing "better than the

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63/ The same possibility exists under expropriation programs too, where state officials and expropriated landowners can collude in setting the price at which expropriated land will be compensated, and the terms of the payment. Accusations of such collusion were made about the expropriation and the purchase programs, usually depending on which of these alternatives one was against.

state" in land settlement, then, represent a more complex phenomenon than nongovernment vs. government, or local vs. central. Similarly, the local developmentalism driving the episodes of good performance of these coops was not unique to coops. It took other forms in the other successful cases studied here--a branch bank, a municipal government, a rural labor union, or even the local office of a public agency run by "locals."

4.37 The Sergipe coops did well with land settlement partly because they were operating slightly ahead of a dynamic agricultural "frontier" inside a state that had already been settled since the 19th century. This is quite different from the "genuine" Brazilian frontier at the western edge of the country's settlement. Since the early 1980s, Brazilian economists have pronounced the era of Brazil's frontier "closed," except for some areas in the south of Piau and the west of Maranhão and Bahia. With this closing of the frontier, skepticism has increased about the possibility for reducing land-tenure inequities in Brazil (as well as in other Latin American countries) through land-settlement programs. Planners usually consider such programs possible only in remote or lightly settled areas where land is "still cheap," where productive agriculture will not be displaced or threatened, and where vast spaces seem to promise efficiency in the settling and servicing of large numbers of people. This was the basis of the Furtado plan for Northeast development in the 1960s, as adopted by the Northeast regional development authority, SUDENE (Furtado 1989): the more settled eastern and coastal parts of the Northeast, like Sergipe, were to be the site of an industrialization program, while the problems of unequal land distribution were to be taken care of with colonization projects located in "unoccupied" spaces on the frontier-like western edge of the Northeast. In the 1970s, the Bank financed one of the few projects of this plan to get off the ground--the Alto Turf project in western Maranhão.

4.38 The desirability of the "unoccupied" regions for the cheapness and availability of their lands ultimately contributed to the disappointing economic performance of many settlement efforts carried out there--the distance from markets, the lack of social and production services, the consequent unprofitability of intensive agriculture. (These features characterize some of the settlements, though not a majority, supported through the Northeast projects.) Investing in agriculture and land transfer in the more developed regions of the Northeast, obviously, would have remedied these problems. This, after all, was one of the justifications for the Northeast rural development projects--to be located in areas of existing market potential and concentrations of small farmers. But concerns about land prices in the more settled regions made project planners skeptical about these regions as sites for land-transfer actions--as distinct from the provision of agricultural services and productivity-enhancing investments. The cases of the Sergipe coops, and others discussed below, suggest that the land markets of some of these more settled regions display some of the openness thought to exist only on the "genuine" frontiers.

4.39 Oranges, tomatoes, and other vegetables. Orange cultivation expanded rapidly in Sergipe in the 1960s and 1970s, replacing extensive low-input livestock grazing in some parts of the region--an unusual reversal of the more typical sequence in Northeast Brazil, in which pasture replaced crops.<sup>64/</sup> Farm-to-market roads and other infrastructure had not yet been built, so the land market was still "quiet"; land values had not yet risen and landowners were not yet anxious to keep their lands in anticipation of an orange boom. Expectations about the region's agriculture at that

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<sup>64/</sup> Wanderley (1988) provides a comprehensive account of this geographic and economic history.

time were actually somewhat mixed, since the main crop of the region was tobacco, not oranges. Processed rustically into "rope tobacco" by growers themselves, tobacco did not need roads and well-developed markets to the extent that the perishable oranges did. Starting in the late 1970s, however, the consumer market for rope tobacco started to decline because of the growing urbanization of the population, the increasing penetration of the market by mass-produced cigarettes, and a government health campaign against smoking, which singled out the cigarettes hand-rolled from rope tobacco as more dangerous. Given all these circumstances, the Sergipe coops could acquire land at reasonable prices before road-building and other supportive state interventions extended the orange frontier. The coops themselves sponsored the building of the roads, but only after the acquisition and distribution of land to small farmers had been assured.

4.40 The Irecê coop's collective irrigation projects in Bahia, and their acquisitions of land through barter investments and municipal land donations, represent a similar move slightly ahead of a "frontier"--in this case, an irrigation frontier. Like Sergipe, Irecê had been settled for more than a century and was anything but a "frontier area" in the traditional sense. A semi-arid region afflicted with periodic drought, it nevertheless had good soils and had been a long-time producer of black beans, castor bean and, to a lesser extent, livestock. In the 1970s, a few large commercial farms introduced tubewell irrigation for vegetable and fruit growing; but irrigation had not spread widely because of the dominance of small and medium farms in the region, their difficulty in getting access to investment financing, and the absence of state interest in facilitating irrigation for small and medium farmers. The Irecê coop, with its imaginative approach to acquiring land for tubewells under the PAPP project, succeeded in extending the irrigation frontier to these small and medium farmers, not to mention the landless farmers. As in the Sergipe case, land prices did not yet reflect the increased values that the successful expansion of irrigated farming could bring, based as they were on the dryland production value of the land.

4.41 In both cases, the coop "extended" the frontier, with support from the state, in a way that (1) intensified agriculture, in contrast to the kinds of extensive agriculture practiced on most frontiers in Brazil and other parts of Latin America; and (2) secured a place for small farmers on this frontier with a high-value crop. Crucial to this strategy, though not anticipated as such by its executors, was the primary emphasis on securing land for small farmers before the state provided infrastructure and subsidies for this activity--that is, before land values were driven up.<sup>65/</sup>

4.42 The "internal frontiers," in sum, shared with traditional frontiers a certain openness and fluidity in the land market, which was crucial to the state's securing land for small farmers, or intermediating its purchase by them. At the same time, they were just the opposite of traditional frontiers. First, they were inside regions that had been long-settled; rural population densities were 25 per km<sup>2</sup> in Tabuleiros Sul, 18 in Ibiapaba, and 15 in Irecê--in comparison to roughly 7 in the three states with significant frontiers--Bahia (8), Piauí (5), and Maranhão (9) (Table 10). Second, because the internal frontiers were in settled regions, they provided unusual opportunities to intensify

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65/ A history of private colonization projects in southern Brazil in the 1930s and 1940s came to a similar conclusion with respect to one of the traits that characterized the more successful projects: they were located on lands that, on the one hand, were undeveloped and, on the other, were near the expanding coffee frontier. They were also far enough away from existing settlement that the projects did not arouse the interest or concern (for losing labor) of the region's large coffee planters (Katzman 1978).

agriculture--opportunities that did not exist on traditional frontiers (distance to markets, lack of infrastructure) or in the non-frontier parts of already-settled regions (high land values, locked-in inequitable tenure patterns). Third, the crops involved were particularly compatible with the labor and management intensity of small farming, unlike the crops that characterized the expansion of the "real" Brazilian frontier particularly, soy bean and beef cattle. Fourth, and as explained momentarily, changes in markets and technology brought about by urbanization and development itself had turned these parts of the settled regions into "frontiers," particularly for small farmers. This last point conflicts with the prevailing view that the increase in land values accompanying development and intensification of land use makes land-transfer actions less possible. Sergipe's orange frontier is a good example.

4.43 The major expansion of orange cultivation in Tabuleiros Sul took place in the 1970s and 1980s only after urban consumer markets for fresh produce had developed in the Northeast, along with marketing systems for these perishable crops. Fruits and vegetables did not have a ready market in Northeast Brazil 15 to 20 years earlier, when urban populations were much smaller. Also, the Brazilian government dedicated substantial resources and attention to the development of wholesale and retail produce centers in the Northeast cities during the 1970s and 1980s. Though some aspects of this intervention have come under criticism, even the critics acknowledge that the Northeast markets for fruits and vegetables have grown markedly in the last 20 years, and that this growth is one of the most impressive achievements of the Northeast's agricultural sector. Sergipe's orange expansion would not have been profitable without these larger developments.

4.44 In the 1970s, Brazil also started exporting frozen orange juice made from São Paulo orange groves, and is now the world's largest exporter. That market became even more attractive in the early 1980s, after the hailstorms in the Florida orange groves reduced production there. Sergipe benefitted as a latecomer--and a small one--from this prior pathbreaking of São Paulo in opening up the export market. More than half of Sergipan orange production is now processed into frozen orange juice for export by two plants installed in the region in the early 1980s. Until that time, Sergipan orange expansion relied exclusively on the market for eating oranges in the urban Northeast. Now, as a small supplier in a large export market for frozen orange juice, Sergipe faces a highly elastic demand for its oranges.

4.45 The rapidly growing Northeast urban market for vegetables also made possible the opening of the "irrigation frontier" in the Irecê region of Bahia, as discussed above (paras. 4.08-4.16). Similarly, the rapid expansion of small-farm tomato production in the Ibiapaba highlands of Ceará, before and during the POLONORDESTE project of that name, would not have been possible without the growing urban markets for tomato consumption in the Northeastern cities of São Luis, Teresina, and Fortaleza, to which Ibiapaba became a major supplier in the 1980s.<sup>66/</sup> The project's building of farm-to-market roads in Ibiapaba--and investment in a wholesale market facility there--also represented the opening of an internal frontier: the Ibiapaba highlands had been settled for a long time prior to that, and tomato cultivation had already started to expand in the 1960s. Starting in the late 1970s, the road investment led to a marked expansion of this highly perishable crop, and was key to the project's economic success.

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<sup>66/</sup> Finan (1981, 1990), and CEASA-CE (1979). Ibiapaba produces tomatoes only for eating and not for processing.

4.46 Tying irrigation and roads to the land. In contrast to the land schemes of the Sergipe coops, the Ibiapaba project did not link its road-building to the establishment or protection of a small-farm landholding structure--though the project's agricultural services were targeted on small farmers. Hence evaluations by both the Bank and the project unit consistently reported that the opening of roads by the project and the expansion of tomato cultivation had led to a worsening in the size distribution of land, as larger farmers acted on the new market opportunities by buying out smaller owners or evicting tenants.<sup>67/</sup> The fruit-and-vegetable frontier could become accessible to small farmers in a significant way, then, only through the kind of institutional intervention that Sergipe and Irecê brought: the provision of infrastructure in the form of farm-to-market roads or small irrigation, slightly ahead of an expanding internal frontier but tied closely to the securing of land and credit for small farmers.

4.47 Like many successes, the experience of the Sergipe coops with land settlement tends to be viewed as an "exception"--small state, non-arid land, dynamic cash crop, competent public sector--and therefore with no lessons to offer for other places. But to the extent that this land-settlement experience shares features in common with the other more promising land experiences discussed here, it does have some lessons to offer. More specifically, (1) land recipients participated in the selection of the land to be acquired and the negotiation of its price, and in its demarcation and distribution; (2) local institutions like branch offices of state or federal institutions, coops, municipal governments, or rural labor unions played crucial roles as "brokers" for small farmers in these activities; (3) land was available for transfer only in "patches," rather than the more convenient large blocks of typical land-transfer programs--together with the fact that the Brazilian land legislation did not allow expropriation of parcels less than 500 hectares; and (4) plot parcels were often smaller than the "family farm" characteristic of traditional land-transfer programs.

4.48 The experiences described in this chapter, in sum, went several steps beyond more typical agrarian-reform programs in decentralizing the decisionmaking about land to a place where reasonably-priced land was elicited, better deals were made, the fiscal and administrative burden on the state was reduced, and more appropriate technical choices occurred. Project planners have not paid due attention to these possibilities because they involve approaches that look piecemeal to those with grander visions--for the same reasons, that is, that private irrigation tends to be ignored by agencies involved in public irrigation, and road improvements ignored by agencies engaged in road building.

4.49 In certain ways, many Northeast municipios are particularly poised to act on the internal frontiers--perhaps even more so than their state and national counterparts. In particular, the mayors of municipios with important rural hinterlands are becoming increasingly preoccupied with the poverty of the rural poor living within their borders, partly because it has become an increasing drain on municipal budgets (see also paras. 4.12-4.14). Some of the more progressive and developmental mayors are looking toward cultivation of vegetables as a more self-sustaining approach to employing their poor, feeding them, and raising their incomes enough to reduce their burden on the municipal budget. The collective gardening projects sponsored by these municipios are a sign of this new concern and its "productive" form, as are the donations of land by municipios in Irecê for collective irrigation plots. Many municipalities in the more developed parts of Brazil are doing the same.<sup>68/</sup>

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67/ CEPA-CE (1982, 1984, 1987b), FAO/CP (1988).

68/ Ferguson (1990:7ff) provides an other example of a concern about rural poverty, and efforts to do something about it, on the part of a dynamic municipality in Paraná in the developed southern region of Brazil.

**4.50** The frequent appearance of small and private irrigation in so many of the cases identified here and elsewhere in this review requires some comment. Shallow tubewell or riverine irrigation at short distances was a feature of two of the three cases discussed in this chapter (Irecê, Ibiapaba), and of three others mentioned elsewhere--the PROMOVALE project in Ceará (paras. 2.66-2.67), the Agreste Setentrional in Pernambuco (para. 5.39), and the BNDES project in Rio Grande do Sul (paras. 5.31, 5.40). This kind of irrigation has been generally ignored by water agencies because it is piecemeal, low-tech, and low status (para. 2.32). In the Northeast in particular, the public sector has taken a more public, centralized, and "large" approach to irrigation than in the rest of Brazil--because of (1) the drought problem, to which large irrigation works were long considered to be the best response, and (2) the dominance of "irrigation space" in the Northeast public sector by two large regional agencies wedded, until recently, to the costly and centralized approach to irrigation. The agencies responsible for making irrigation work in the above-noted cases, in contrast, operated at the state level and/or were not specialized in irrigation--project--coordinating units, agricultural extension services, banks. What made these projects work, moreover, had less to do with irrigation expertise--most of these areas already had some tradition of small and decentralized riverine irrigation--than with making it possible for small farmers to obtain (1) credit for the purchase of the equipment, (2) cooperation from the electric utility in estimating the cost of the connection, supplying the transformers, and/or actually carrying out the connection, and (3) assistance in forging water-user agreements, sorting out land conflicts, acquiring parcels of land, or organizing for group production.

**4.51** Recently, the Brazilian government and the Bank carried out a comprehensive review of the economics of irrigation investment in Brazil (WB 6/22/89). Generally cautious--particularly about irrigation in the Northeast--the review carefully specified the conditions under which irrigation would be economic. Three of these conditions fit exactly the kind of irrigation and agriculture practiced in the cases reviewed here. Namely, (1) private irrigation with short conveyance distances and low pumping lifts, which is a "fraction" of the cost of public schemes (US\$600 to US\$3,500 per hectare vs. US\$6,500 for public schemes) [*Ibid.*, para. 9]; (2) production of high-value fruit-and-vegetable crops vs. low-value food-staples like wheat and corn (para. 12[a,b]); and (3) an improvement of the expected returns resulting from the size, location, and organization of markets for these crops (para. 12[b]). Certain kinds of irrigation and approaches to it, in other words, seem quite desirable for small-farmer-oriented development programs.

**4.52** Recent research, as noted above, has emphasized the importance of rural infrastructure in bringing about rural growth and reducing inequality. Many now believe, therefore, that the targeted rural development projects made a mistake by side-lining infrastructure in favor of agricultural production services. The discussion in this section seems to bear out this conclusion. But there is one major caveat: it was not the provision of irrigation or roads in themselves that facilitated a poverty-reducing style of agricultural growth but, rather, the strict linking of these investments to providing small farmers with secure access to the land, and in areas where more intensive production was profitable.

## V. TALES OF DISSEMINATION IN AGRICULTURE

**5.01** Evaluators of the Northeast projects have been disappointed with the performance of agriculture. When increases in output occurred, they were said to result "only" from increases in

acreage planted rather than from increases in yield--a critique that was also made of rural development projects worldwide.<sup>68/</sup> The state agencies in charge of agricultural extension and research frequently received poor grades in supervision and evaluation reports, and the criticisms of their performance pointed again and again to the same problems. Research was "too academic," not concerned about small-farm crops and practices, not sufficiently engaged in field testing and adaptation of its findings, and not interested in collaborating with the extension service in the interests of dissemination. Extension agents, in turn, had "nothing to extend" and inadequate experience and in-service training, were in their offices more than in the field, and were chronically short of what they needed to do extension--vehicles, funds for fuel and vehicle maintenance, and per-diems to travel. The exceptions to this picture are the subject of this chapter.

**5.02** These complaints are familiar ones, and certainly not unique to the Northeast Brazilian case. The Northeast projects devoted considerable thought and resources to remedying these problems, and building up the capacity of these institutions. In particular, research agencies were given explicit targets in terms of field-oriented behavior--number of demonstration plots, number of field trials, etc. Extension and research were admonished frequently about their failure to develop a collaborative work style, based on the assumption that adoption and dissemination could not happen without collaboration. Despite these efforts and the fact that dissatisfaction with the performance of extension and research did not abate, several exceptions stand out--in terms of widespread increases in productivity resulting from successful dissemination of research findings.<sup>69/</sup>

**5.03** The exceptions reviewed here did not fit the model of agricultural innovation and diffusion implicit in the above critiques and concerns. (1) Extension was not necessarily the agency that carried out, or caused the dissemination to occur; (2) research was not necessarily the institution that carried out the field trials and the adaptation that facilitated widespread adoption; (3) some of the successful disseminations were carried out by institutions that were getting consistently poor grades on their overall performance in Bank supervision reports and other evaluations; (4) the forward movement that carried research from basic findings to field testing, adaptation, and dissemination was not necessarily the result of collaboration between research and extension; when it was, the collaboration occurred only around that particular episode, and was not the working style of those two agencies; and (5) two widely disseminated mechanical innovations discussed below--the cistern and the animal traction implements--turned out to be unsuitable for adoption when first released by the research agency; it was only the unforeseen adaptive work that the "user" agencies had to do that made these innovations adoptable.

**5.04** What did bring about these dissemination successes, if it wasn't good research and extension agencies doing what they were supposed to do? If the same agencies that didn't collaborate, didn't field test, and didn't have anything "to extend" could suddenly change their character, this suggests that part of the problem had to do with something outside the agencies rather than with their inherent capacity. Common to all the exceptions, as the cases presented below

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<sup>68/</sup> E.g., WB (1983 & 1987). For a cross-country review of evidence of the economic impact of agricultural extension, see Birkhaeuser et al (1989).

<sup>69/</sup> For analyses of Brazilian agricultural extension and research, see Alves (1988), Fvensen (1989), and Homem de Melo (1986).

demonstrate, was a quite different set of conditions, which was strikingly parallel to the kinds of demands and incentives that surrounded the better-performing episodes described above in roads, water, irrigation, and land settlement. The cases illustrating these points fall into two categories--(1) those involving campaigns against crop disease and pests, and (2) those that did not.

Disease, pests, and other scourges

5.05 Several of the successes in the dissemination of improved varieties resulted from an attempt to control disease or pests in existing plantings. During these episodes, the way extension and research customarily operated changed radically. Three cases in particular stand out--oranges in Sergipe, bananas in Paraíba, and cotton in several of the Northeast states.

5.06 In all three cases, the successfully-disseminated new varieties were preferable on grounds other than their resistance to disease, but had not been promoted or adopted previously. The new orange variety ("pear" orange) was not only disease-resistant, but was a juice variety ("Bahia" orange), as opposed to the eating variety that was the only one cultivated previously; this facilitated the establishment of a juice-processing industry in the region which, in turn, ended up exporting frozen orange juice to Europe and the United States. The new cotton variety<sup>70/</sup> was desirable not only for its resistance to the boll weevil, but for the switch it required from perennial to annual cotton; the perennial plant had been associated with a tradition of low-productivity joint production with extensive livestock (which fed on the leavings of the cotton tree after the harvest) and sharecropper production of interplanted annual subsistence crops. Prior to the campaigns against disease or pests, the productivity of these crops had been stagnant or even declining; producers were in a kind of low-productivity equilibrium, with state governments not able or worried enough to do anything about it.

5.07 The successful disseminations resulting from the disease and pest campaigns all achieved their results in a relatively short period of time. In Sergipe, almost all orange growers switched from the disease-prone eating variety to the disease-resistant juice variety within four to five years--a rapid transformation for a perennial crop. In Paraíba, banana producers shifted completely to the disease-resistant variety within three to four years. Cotton production, after falling drastically in the mid-1980s, regained its earlier production levels within four or five years. All three cases, in addition, involved cash crops that were already being produced by small farmers, but not exclusively by them. The success of Sergipe in disseminating the new orange variety, for example, did not work in Paraíba, even though the agro-climatic environment was quite similar, because farmers were not already producing oranges there.

5.08 The agricultural agencies of the state governments all played a strong role in mounting the disease- or pest-combating campaigns. Their efforts were characterized by a remarkable level of coordination and dynamism--in contrast to the way these agencies typically behaved. More striking, these interventions involved an unusual combination of high subsidy and high discipline, which forced the adoption of the new variety. First, farmers received credit at negative real interest rates--though

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<sup>70/</sup> The boll-weevil campaign actually began with dissemination of a kit including an electrodyne applicator for pesticide, which had been developed by a multinational seed firm operating in Brazil (ICI). The early-maturing improved variety (precoce) was introduced, and included in the kit, somewhat later.

no more negative than the prevailing rates on official agricultural credit--to buy certified seeds, rootstock, or seedlings, and fertilizer and pesticide applicators, and to eradicate diseased plants and put in new ones. Second, the banks, the extension service, and the research agency carefully monitored the uses to which the credit could be put. Borrowers had to show certificates proving they had purchased the approved variety, and applied the requisite fertilizer; or they received credit only in kind, in the form of the recommended inputs. Third, in several cases, the state held monopoly control over inputs. In Sergipe, for example, the agricultural experiment station controlled the quality of seedlings available in the state's private nurseries because (a) it was the sole source of the rootstock used to make the graft (from a lemon tree), and (b) the station itself had been responsible for the development of a private nursery sector in the state, previously non-existent, in that it had selected and trained 60 small farmers to produce the certified seedlings. Fourth, the subsidy had automatic "sunset" provisions--though not explicit--to be terminated when the disease problem was overcome.

**5.09** The way agricultural credit was subsidized in these stories contrasts sharply with the way it has typically been subsidized in Brazil and many other countries--namely, indefinitely and across the board. In the above stories, subsidized credit (1) focused on a campaign to solve a problem with a particular crop, (2) and over a fixed time period; (3) forced changes in cultivation practices and input use that would be automatically self-sustaining, once the subsidy and strong control were dropped in a later period; and (4) came with a strong controlling presence from the state's agricultural agencies--a kind of carrot-and-stick approach. The more typical agricultural-credit subsidies tended to be all carrot and no stick.<sup>71</sup>

**5.10** The disease and pest campaigns did not involve crops produced exclusively by small farmers, but all made special efforts to reach them.<sup>72/</sup> This was partly a result of a generally increasing awareness of small-farmer issues in the Northeast agricultural agencies, but it also had to do with the negative externalities of disease: if small farmers were not included in the public assistance efforts, infestation in their crops would ultimately affect those of the larger farmers. The attempts to include small farmers in the productivity-increasing campaigns also recognized the different economics of small-farm operations--higher unit prices for purchase of small volumes (relevant to the purchase of pesticides and medicines) and lack of information about equipment and its use. In Pernambuco, for example, the state organized small "brigades" to distribute a weevil-fighting package to small farmers, training one farmer (who was paid for the training) in the proper use of the pesticide applicator. In Sergipe, the state worked partly through the two cooperatives of small

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<sup>71/</sup> This contrast parallels that between Latin America's import-substitution policies and those of East Asia. The East Asian countries were as lavish as Latin America with tariff protection and credit subsidies for industry, but they were also highly selective about the sectors and firms to which protection was granted, and very demanding of performance; if a firm's output or exports did not increase within a year or two, the subsidies were abruptly withdrawn (Amsden 1989). Latin America, in contrast, offered protection more across the board, with less selectivity and fine-tuning and no demand for performance (Sachs 1985).

<sup>72/</sup> Only the case of bananas, moreover, occurred fully within the Bank-funded project. In Sergipe, the disease problem and its response came before the project, though the project supported the institution that led the disease campaign--the Boquim experiment station. In cotton, though the Bank was involved with the boll-weevil problem, the response involved initiatives mainly outside the Northeast projects. Some of the agencies carrying out the campaign were the same as those carrying out the Northeast projects and, later, availed themselves of project funds.

orange-growing farmers, also using "brigades." In all these cases, the state agencies made special efforts with small farmers because, as they said, they had to do something more aggressive than simply let the word out through the extension system.

5.11 Finally, the public figures and agency managers who led the disease campaigns had a strong sense of mission because the problem threatened to undermine the economy of certain microregions, regions, or even whole states. The Boquim experiment station, which spearheaded the dissemination of the disease-resistant orange variety, wanted Sergipe to "beat" its large neighbor state Bahia in orange production--from whence the improved orange variety had originally come. The small group of agricultural researchers who managed the station referred to themselves as "sons of Boquim"--proud of their region, wanting it to progress, taking responsible positions in the local orange-producer association and in town government, as well as wanting to "show up the Bahians"--whom they considered to be "lazier" than Sergipans were. Adding to this sense of mission around disease eradication were the two small-farmer cooperatives that had been formed earlier. Though these small growers had been producing tobacco when the cooperatives were formed, they had been moving into oranges as the market for tobacco declined, and hence were eager to act as agents of dissemination for the new variety. The experiment station, in turn, saw its interest in dissemination served by working hand in hand with the cooperatives.

5.12 The sense of strong regional identification and a dramatic developmental mission drew the Boquim station out of its experimental plots and into the fields of growers--in a way that was unusual for agricultural researchers. Similarly, though on a wider scale, it was the concern for the fate of "Northeast cotton" that provided drama to the weevil campaign, since cotton production was an important part of the agricultural economy of several Northeast states.<sup>73/</sup> Not doing anything about the boll weevil or orange disease, in other words, involved high costs to the regional economy--or, it meant foregoing attractive market opportunities for agricultural growth. Much of the work of agricultural research and extension agencies--multi-faceted and dispersed--is not blessed with the driving force of this kind of strong regional identification and high-level worry about a particular crop.

5.13 How are these disease-driven stories of increased agricultural productivity relevant to the broader palette of agricultural research and extension activities, with their more ongoing nature? Clearly, one can't wait for a disease of epidemic proportions before trying to improve agricultural productivity. Even if one did, what would keep agricultural extension going between these epidemic infestations and their energizing campaigns? What are the lessons of the disease-driven stories, in short, for normal times?

5.14 The transformation of work. The disease campaigns transformed the system of incentives and penalties under which agricultural agencies typically work. In that the characteristics

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<sup>73/</sup> In the first quarter of the 20th century, the southern branch of the U.S. extension service originated in a similarly dramatic campaign against the cotton boll weevil. In fact, the "good start" of the southern branch was attributed to the "easiness" of that campaign, in terms of its highly standardized and homogeneous mission. This contrasted with the more "difficult" evolution of the northern extension service, where each state developed its own particular multi-faceted work agenda, partly because of the greater heterogeneity of agriculture in the north (Baker 1936).

of this transformed work style and work environment were quite similar to those of the better-performing episodes described previously, the disease episodes do provide lessons that do not "require" disease for their implementation.

5.15 Extension and research typically work on several fronts at once--many crops, many inputs, many special programs (including the Northeast projects), and many different specializations. Given all this choice between crops and activities, these agencies pay more attention to one crop or problem than another at any particular moment and depending on the circumstances of that moment. Often, they do not have clear and confident proposals about what to do about "low productivity," nor do they have firm control over the supply of inputs that is usually required to get a "modernizing" technology to be adopted widely. Their performance, moreover, is customarily judged by their funders in terms of inputs rather than outputs--number of farmers visited, of farmers attending courses, of field trials, of demonstration plots, rather than rates of adoption of new varieties, observed yield increases, etc. The agencies suffer no particular penalties for failure to perform in these latter areas, nor is their behavior driven in any way by fear of the consequences of poor performance--as it was in the case of the Bahian land agencies, or the Sergipe rural water agency.

5.16 Disease campaigns change all this. The epidemic dictates the crop, the problem, the region, the package of inputs and practices that have to be applied and that are dependent on the cooperation of the input-supply network--temporarily narrowing down the work agenda to one crop and to a specific problem with that crop, and assuring adequate funding for recurrent expenditures. It stipulates an activity with a clear beginning and an end--eradication or substitution of the diseased plants with the improved ones. And the end can be reached, usually, within a period of time shorter than the five-to-eight-year life span of the typical rural development project. The anti-disease package also takes a more concrete form--seeds, rootstock, or seedlings, and fertilizer, pesticide, and pesticide applicators--than the changes in cultivation practices that often dominate the recommendations made by extension agencies to small farmers.

5.17 The disease problem itself is more clearly measurable than the problems research and extension usually work on, and the "end" is marked by a highly measurable standard that involves outputs and not inputs--number of diseased trees eradicated, number of acres planted in the new variety, reduced incidence of the pest in the region, increases in output of that crop. Conversely, failure to perform is measurable and conspicuous--continued high levels of pest incidence and continued declines in production. The costs of bad performance are also clear, as is their incidence. Growers suffer losses of income and, just as important for mobilizing state action, the state or the region suffers from the decline of an important economic activity--declining tax revenues, declining employment and its attendant social problems, and declines in the incomes of an important constituency. Civic leaders fear the loss of a sense of regional self in places where economic, social, and cultural traditions are defined by long association with a particular crop--like cotton in the Northeast states. Regions that find themselves on a roll with a relatively new crop--like oranges in Sergipe--see their visions of a dynamic future dashed if they don't act rapidly.

5.18 All this can add up to a more compelling force to bring about changed farming practices than a promise of "increased yields" by the extension service. Whereas the yield-increasing package with quite similar components promises to improve income, the anti-disease package promises to cut impending losses and thereby keep income from falling. The subsidies built into the disease package, and the reduction in transactions costs brought about by the heavy presence of the state in the disease-

stricken zone, reduce the costs of adoption significantly in comparison to more normal times. Disease and pest epidemics, in sum, radically alter the measurability of success and failure, and the penalties for poor performance. This explains why states and growers who had done little for years about low productivity in an important crop like cotton could be jolted into highly effective action that, among other things, succeeded in transforming agriculture.

5.19 The literature of induced innovation stresses the importance of powerful grower groups in determining the paths taken by agricultural research and other agricultural institutions of the state.<sup>74/</sup> But in driving the cases discussed above, the concerns of state and regional actors about tax receipts and the fate of the regional economy seemed at least as important as grower demands themselves. The literature of public choice, though showing how third-world states have acted independently of farmer interests in order to raise revenues, focuses exclusively on how these actions penalize agriculture. The state marketing boards for export crops in sub-Saharan Africa are the most commonly cited example, which squeeze the producers of these crops in order to raise revenues, and thereby jeopardize agricultural production.<sup>75/</sup> With the disease campaigns, in contrast, the state's concerns about tax revenues led to actions that favored agriculture.

5.20 The combination of expected high rewards and high punishment for failure was not unique to the disease campaigns. It also characterized the "tough love" provided by strong governors to some components of the Northeast projects, as discussed above, and the good performance of some of the land expropriation-and-settlement programs. Just as the disease campaigners felt that "it was only a matter of time" until they lost the whole crop, so the agrarian-reform managers believed that it was just a matter of time until they would lose the gains they made, or the chance to act at all, if they did not move quickly and effectively; likewise, the Sergipe water engineers feared the loss of their jobs--as their demanding governor had threatened--if the rural water systems weren't in place well before the end of his term of office.

5.21 Up from mediocrity. The successful dissemination of research findings through disease campaigns could not have occurred, of course, if the Northeast state research and extension agencies had not been doing something "right" during the longer period over which they so often received low grades in evaluation and supervision reports. The disease campaigns, in other words, must have represented only the final result of an ongoing and long-term process of research and field testing that was not bounded by the narrow agenda, the sense of urgency, and the high penalties of failure that characterized the disease campaign itself. One possible explanation of successful episodes embedded in mediocre institutional settings is that the task during the episode is somehow different than what the organization was usually doing. This kind of success would be less the result of a change in the

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<sup>74/</sup> E.g., Binswanger & Ruttan (1978).

<sup>75/</sup> Bates (1981) is the seminal work in this literature. For a much earlier statement of this concern, see Bauer and Paish (1952).

capacity of the agency or its leadership than of a change in the nature of the demands made on it.<sup>76/</sup>

5.22 If all that was necessary to produce the dissemination successes of the disease campaigns was the final "pull" of a state concerned about disease, does that mean that Northeast research and extension were doing fine all along, the poor grades notwithstanding? Another possible explanation of sudden good performance, in other words, is that the agencies were actually doing something right all along, including during the mediocre period. Without the benefit of hindsight arising from the successful episode, this "something" wouldn't get noticed and evaluators would have no reason to interpret anything about the generally mediocre agency as "right." In order to fully understand the lessons of the dissemination successes, then, it is just as important to understand what was being done right during these longer, quieter periods as during the more dramatic episodes.

5.23 The point of looking for the antecedents to success in prior mediocre times is not to rewrite the earlier judgment, nor to say that what looked mediocre was really good--though that could conceivably be the result of such an exploration. Though the successful episodes may all exhibit a distinct pattern of short duration, narrowing, concreteness, high penalties for failure, and easily measurable output, this may be only half the story. The more difficult part to discern, and program for, may be the ongoing qualities of an organization that allowed the flares of success to occur in the first place. Laying so much stress on the nature of these episodes, then, is not to argue that an enduring agency can be built only by arranging a long string of such episodes--though that might not be a bad way to start. A small step toward integrating the successful with the mediocre, and the episodic with the ongoing, would be to ask evaluation officers to routinely identify at least one antecedent to a current success in a former period of mediocrity. This would improve our understanding of what is important in institution building. The following section provides some additional suggestions. The section after the next lays a basis for dealing further with these questions by bringing in cases of successful disseminations that had nothing to do with disease.

5.24 Good starts. One way to approach the problem of mediocre performance is to try to bestow on the more mundane ongoing work of agencies some of the traits associated with the bursts of performance around disease and pest epidemics. The kinds of successes described in this chapter and throughout this study have a tremendously energizing effect on an agency. When managers and staff think they can make something happen, they feel profoundly satisfied, heady, and wiser. They want to take on more and more.

5.25 Having an easy fast success at the start puts an agency on a roll that propels it into the succeeding, less dramatic stages. It now has a standard of performance to meet that is defined by its own performance in the earlier period, a newly acquired good reputation that it is proud of and wants to keep, and a new confidence about its ability to make things happen. That's why the new rural water agency in Sergipe was so keenly disappointed about its inability to do well with irrigation; this followed on the heels of its first success, and resulting high reputation, in installing rural water systems throughout the state, and in having the unstinting support of a powerful governor.

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76/ In a personal communication, Vernon Ruttan reports that the extension agencies that participated in the highly successful dissemination of Green-Revolution varieties in South Asia looked just as listless and mediocre immediately before that period as the Northeast agencies have been so frequently portrayed.

Expropriations carried out by agencies in the first months of the PAPP projects had this same energizing effect, as did the disease campaigns themselves.

5.26 The land purchases required by the Bank of Piau's new project unit, even before the project commenced, represented another such heady start (paras. 2.33, 4.07). The project unit came up with the 30,000 hectares required by the Bank before the allotted time period expired, and acquired an additional 20,000 hectares to boot. This task had much the same characteristics of the disease campaigns: rapid and conspicuous results, easily measurable performance, high penalties for failure (the poorest state in Brazil losing the largest infusion of funding ever from an outside project), and narrowness and relative ease of execution (land could be purchased or otherwise acquired by any agency, not just a land agency, and doing so didn't require specialized expertise). Though the subsequent performance of the Piau project unit has had ups and downs, there is no question that the first success had a significant formative impact on the agency, and contributed to its ability to move on to the more complex and less dramatic tasks of settlement thereafter.<sup>77/</sup>

5.27 Success at these particular tasks, of course, does not guarantee that an agency will be successful at the more difficult subsequent tasks--as some of the experience with maintenance of rural water systems and providing services to new settlers have shown. But a first success is much better than none at all in creating capable agencies. Also, the problems of the successive phases often have to do with a failure to recognize the more difficult nature of these tasks, and to re-think them in a way that makes their execution more likely.

5.28 The disease campaigns also qualify as an easy first task--just as the boll-weevil campaign made for a good start for the southern U.S. extension service in the early twentieth century. Projects could narrowly identify a particular crop with a particular bottleneck to improved production, the breaking of which could occur in fairly short order and would have an impact on a reasonably large number of producers and workers. Disease would not have to be the only kind of problem identified. The "reality assessments" of Pernambuco state's project unit--carried out in conjunction with agricultural extension and research--conducted precisely that kind of exercise: they canvassed small-farm agriculture a few municipios at a time, identifying a problem for a particular crop cultivated by large numbers of small farmers in those municipios, and a solution that would break a bottleneck in production, processing, or marketing within a limited period of time--preferably, one crop cycle.

5.29 Thinking this way about projects is contrary to some of the current wisdom about agricultural research and extension for small farmers. The latter has been critical of crop-specific programs on the grounds that (1) they over-expose farmers and particular regions to the price fluctuations of a particular crop, and (2) they ignore or violate the complex farming-systems dynamics underlying the decision-making of farmers, which for small farmers in particular involve the production of many crops plus off-farm economic activities. Though this more sophisticated

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77/ The strategy of a well-chosen first task seems to have been behind the design of the Aga Khan Rural Support Programme (AKRSP) in Pakistan (WB 1987 & 1990b). The program was organized around new village-level associations which, as their first task, were given an infrastructure project of their choosing. In an unrelated study of village associations in Colombia, Edel (1969) actually found that those organizations starting with a works project--as opposed to other tasks like credit or a community store--had a much higher survival rate, suggesting therefore that works projects were good first tasks.

representation of economic decision-making represents a major advance in the understanding of small-farmer systems and how to help them, it is difficult and sometimes counter-productive to build this kind of complexity into organizations. The large menu of possible activities allowed or encouraged by such a systems view of farming involves the kind of complexity, lack of clear performance measures, and absence of penalties for poor performance from which the successful episodes did not suffer.

#### Dissemination without disease

5.30 The patterns running across the non-disease cases of successful dissemination shared certain similarities to those of the disease cases and throw more light on the question of what causes widespread dissemination of research findings to occur. Some of the examples drawn on for illustration are:

5.31 (1) The development and dissemination by the experiment station in Belém do São Francisco (Pernambuco) of an industrial tomato suitable for irrigated cultivation in the Petrolina-Juazeiro region of the São Francisco River Valley (Bahia-Pernambuco), a region that is now considered to be one of the only agricultural growth-pole successes of today's Northeast;<sup>78/</sup> (2) the development and widespread dissemination throughout the Northeast of an early-maturing dwarf cashew variety by the research agency in Ceará; (3) the development of a fungus-resistant black bean by an experimental station of the state research agency of Pernambuco, widely adopted in the nearby black-bean-growing Irecê region of Bahia; (4) the widespread dissemination in Sergipe of research findings of the Boquim experiment station on the interplanting of cassava and passion fruit with orange trees; (5) the field testing and adaptation of improved varieties of vegetables by the Limoeiro experiment station in the agreste zone of Pernambuco, widely adopted in that region by small farmers, and most dramatically represented in the intensive cultivation of lettuce, green onions, and cilantro in the Natuba Valley; (6) the dissemination throughout the Northeast of a cistern for holding rainwater, developed by the Center for Research on Dryland Tropical Agriculture (CPATSA) in Petrolina, Pernambuco--part of the national system of agricultural research centers (EMBRAPA) specialized in particular crops; (7) the field testing and adaptation by the Pernambuco project unit of implements for animal traction, also developed by CPATSA; and (8) the modification, field testing, and adaptation of the standards used for transformers connecting up small-farmers irrigators to the electric power net, carried out by the National Development Bank in conjunction with a local organization in the southern state of Rio Grande do Sul; this led to a transformation of small-farm agriculture in that region from dryland to irrigated cultivation, and a nationwide change in official standards used by power utilities, which made connections easier and less costly for small irrigators.<sup>79/</sup>

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<sup>78/</sup> Though this development was initially associated with small-farm production, much of it on contract to tomato-processing firms, the latter have been increasingly buying up lands and undertaking production on their own, changing the initial character of this expansion more to one of large scale, high technology, and contract labor.

<sup>79/</sup> Though this last case occurred outside the Northeast, the circumstances surrounding it were quite similar to those of the Northeast projects. The achievements of this case were applied to subsequent BNDES projects in the Northeast, and it also repeats the patterns found in the Northeast examples.

5.32 As with the disease episodes, the "pull" of demanders stands out in these stories. In the case of the industrial tomato, large food-processing firms in São Paulo contributed, along with the university there, to financing an industrial-tomato research project at the Belém-do-São-Francisco experiment station. The Arcoverde experiment station in Pernambuco, which came up with one of the most applied and small-farmer-oriented research agendas in the state, did so only after being invaded by a group of peasant farmers of the area; they would not leave the station, they said, until the station's management would hammer out a research agenda that was more relevant to small-farmer needs. The project-coordinating unit in Pernambuco, under heavy pressure from the governor to "do something for small farmers," put together a set of teams to do "quick-and-dirty" assessments, county by county, of crop problems and potential bottleneck-breaking interventions; out of these assessments came a set of applied, mini-research tasks--with dissemination and "results" being the specified end product.

5.33 The most influential demanders behind the successful disseminations were (1) other public agencies themselves, or individuals or groups of individuals within them; (2) medium-size commercial farmers who produced the same crop as the small farmers (oranges in Boquim, black beans in Irecê, cotton in various states) and who, as local elites, had a strong influence on experiment stations in their region and other field offices of state agencies; (3) elected leaders--governors, legislators, mayors--who increasingly viewed small farmers as an important constituency, and who were looking desperately for "productive" approaches to rural poverty, which was becoming more and more of a fiscal and political burden on their administrations; (4) the World Bank which, by insisting on a small-farmer orientation over many years, had empowered a generation of government technicians sympathetic to these concerns, and given them considerable experience in this area through the Bank projects; and last and least (5) small farmers themselves. The rest of this chapter treats three forms of this demand--from other public agencies, from local actors other than beneficiary groups, and from small-farmer groups. It closes with a discussion of issues of "supply."

5.34 The case of the inadequate innovation. The dissemination of the CPATSA cistern originated in the visit of the governor of Sergipe to the CPATSA research center, and his asking what they had "on the shelf" that would have the biggest impact on the semi-arid region. CPATSA strongly recommended its cistern, yet to be disseminated; the governor enthusiastically adopted the cistern and embarked on a program to install it throughout his small state--an effort that was subsequently picked up by other Northeast states to the point that CPATSA now considers its cistern to be its most widely disseminated innovation. But when the state's rural water agency started installing the cistern, it turned out to be technically flawed; CPATSA had clearly not done the field testing and adaptation. Caught in the middle of a highly publicized program to supply water to poor rural households, the Sergipe governor and his water agency could not simply retreat. The water agency itself carried out the testing and adaptation that CPATSA should have, and came up with an improved model that was also only two-thirds the cost of the CPATSA version.<sup>80/</sup>

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<sup>80/</sup> The water agency's various iterations of the cistern finally ended up with the "chinese-hat" form, which was superior in that (1) its conical shape avoided the stress points in the corners of the previous rectangular version, which had caused leaks and required difficult repairs; (2) the concrete, conical roof was maintenance-free, in contrast to the tin sheeting or wooden beams of previous forms, which were also frequently stolen for roof repairs; (3) the concrete "hat" eliminated the need for plastic sheeting, subject to tearing, which was used to cover the brick-walled-rectangular and tin-roof-covered versions and to seal their interior; and (4) it held significantly more water than CPATSA's cistern.

5.35 A similar chain of events with another mechanical innovation of CPATSA occurred in Pernambuco. One of the project-unit managers took the latest in animal-traction implements from CPATSA. But when the unit tried to introduce this innovation to the small farmers of the region (where CAPTSA was actually located), they rejected it because it was too cumbersome to use, and designed for two animals rather than one; this doubled the requirements for capital and grazing land, a significant burden for poor farmers. The project unit, anxious to get results and not go back to the drawing board at CPATSA, consulted with farmers in the region about the necessary adaptations, and then contracted out iterations of the suggested changes to a local blacksmith. This kind of field testing and adaptation is, of course, what the research center should itself have done before releasing the implement package.

5.36 If the user agencies had known that the package they carried away from CPATSA was inadequate, they may not have taken it in the first place. Only because they were caught in a process of having to show results, and were intensely interested in doing so, did they finish what CPATSA had left undone. They valued the returns to be had from testing and adaptation more highly than did the research agency, whose performance was not judged by standards of adoption and dissemination. This experience suggests, along with that of the disease episodes, that the problem of agricultural research and extension lies partly outside these institutions: they have not been subjected to enough demands for results from users and others who do care about dissemination.<sup>81/</sup>

5.37 The local connection. Local actors and institutions played an important role in the cases of successful dissemination--mayors and municipal governments, vocational schools, cooperatives, Rotary Clubs. In many cases, the important local actors were researchers at experiment stations who were born or raised in the area, or had lived for many years there; they also played important civic roles in their towns--they were perhaps small commercial farmers themselves, officers in the Rotary Club and other civic associations, and even mayors. They worked to promote the development of their municipio or region in general, and their interest in disseminating improved varieties and practices came out of that larger passion for bringing "development" to where they lived.

5.38 The director of the Boquim experiment station came from an orange-grower family, organized and headed the regional association of orange growers, and ultimately became a dynamic mayor of the municipio of Boquim; he was born and raised in Boquim, fiercely loyal to the region, and did not want to move to the capital city, only two hours away by paved road. Similarly, the president of the Irecê coop came from a prominent commercial farming family in the region, had a university degree in agronomy from the state capital, had moved back to Irecê after his studies

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81/ Another success story attributable to user demand for research comes out of a recent A.I.D. evaluation of its support for many years to institution building in agricultural universities in Brazil (Sanders *et al* 1989). Though generally positive on institution-building grounds, the evaluation points to the difficulty of getting these institutions to do more applied and "relevant" research. The case study on the Center for Agricultural Sciences at the federal university in the Northeastern state of Ceará described an important exception to this rule: the applied research on (1) improved sheep varieties, leading to a widely disseminated improved variety (Morada Nova Branca), and (2) improving the carrying capacity of the native range in the semi-arid zone of Ceará for beef cattle, goats, and sheep. Unlike the rest of the university's agricultural research, the study pointed out, these more applied results came out of research programs that were contracted for by the Development Bank of the Northeast (BNB), a regional development banking parastatal. The BNB's contracts with the university required and financed the extension work necessary to field test and disseminate results (Sanders *et al* 1986, & 1989 [Annex D & E]).

because his family "just couldn't adapt" to the capital city, taught at the agricultural vocational school rather than a university, and used the school and his classes as a mini-experiment station for testing varieties and practices that he then disseminated to small farmers through the cooperative.

5.39 The researcher in charge of horticulture at the Limoeiro experiment station in Pernambuco was also a prominent member of the Rotary Club, and a long-time resident of the area. He had fought a long hard battle to assist tenant farmers in the Natuba Valley to acquire land for the irrigated cultivation of lettuce, green onions, and cilantro. He dedicated his research program to improving these crops, traditionally grown in the region by small farmers, and to disseminating the results to the Natuba farmers and others. The result of these efforts was a picture-postcard landscape in the Natuba Valley of rustically irrigated and intensive agriculture that was unusual for Northeast Brazil--a mini-success story captured in a poster circulated widely by the state's research agency.

5.40 Finally, the success of the National Development Bank (BNDES) in coming up with workable standards for the transformers for small irrigation pumps, and in getting them accepted by the state utility and hooked up to the power grid, depended on the enthusiastic participation of engineers teaching at the local vocational school; they viewed the small-farmer irrigation project as having the potential to significantly improve agriculture in their region, as well as the incomes of landless farmers. The BNDES had previously tried in vain to interest the engineering department of the state university to carry out this work under contract, and ended up contracting the local vocational school instead, which was eager to work on the problem.

5.41 The local institutions of these stories were less sophisticated and prestigious than the institutions through which the Northeast projects operated, or which the Bank tried to influence in a more dissemination-oriented direction--state and federal research centers, universities, state extension services. These more modest actors were eager to do the work because they were interested in the fortunes of their region, and because their prestige and status came from making things work where they lived. Applied work was not second-class for them, the way it was for research institutions.

5.42 Another variation on the theme of strong local actors and strong demanders comes from the Boquim experiment station in the Tabuleiros Sul region of Sergipe. As noted above, that station played a central role not only in developing and disseminating improved varieties of oranges and the crops interplanted with it, but also in lobbying to bring juice-processing firms into the region and securing public subsidies for them; ultimately, this made it possible for the region to tap into the lucrative export market for frozen orange juice. In contrast to most experiment stations in the Northeast, the origins of the Boquim station were in dissemination, not research--a fluke of that region's particular history. The Boquim station was set up in the early 1970s as a mere "promotion station" for the new improved orange variety developed in the 1960s by the citrus research center at Cruz das Almas in the neighboring state of Bahia. (At that time, the region around Cruz das Almas also grew oranges.) As a result of these applied beginnings, and the central role played by oranges in the dynamic expansion of the Tabuleiros Sul region, Boquim's subsequent research always had an applied style. The Boquim station's sequence of institutional growth--"backing into" research from promotion--was just the opposite of that sought in the Northeast projects, which tried to get agencies doing research to move "forward" into more applied work. But whereas Boquim's origins and associations placed a high value on moving from application to research, there was nothing about the origins or associations of the research centers that would draw them from research into promotion.

5.43 The Boquim story, together with those told above of the CPATSA cistern and animal-traction implements, contains two lessons. The first is that supporting the more applied agencies to do field testing and adaptation may be a more effective way of bringing about the promotion and dissemination of research results than trying to cajole research institutions themselves into being more applied. The second is that researchers are more likely to be interested in applied work the more rooted they are in local development struggles. Researchers like these become the "demanders" of applied work because of their combined roles as researchers and civic leaders, promoters of local development, and local growers.

5.44 Local elites revisited. The importance of local boosterism in some of these stories of agricultural dissemination raises another set of issues. The "boosterists" who drove the search for better agriculture and its dissemination were local elites--university-trained agronomists who were sons of medium farmers in the region, locally born and bred agricultural professionals working in the field offices of state agricultural agencies, teachers in local vocational schools, mayors. But project designers concerned about poverty have shied away from local elites for two reasons: (1) given the chance, local elites have tended to appropriate the benefits of targeted projects and often act against the interests of small farmers and the poor; and (2) local government, as run by these elites, has tended to subordinate such programs to political purposes and to be technically and administratively weak. State agencies, like those carrying out the Northeast projects, often talk of bypassing local government and local elites in order to work "directly with the poor"--rural labor unions, cooperatives, and other less formal associations.

5.45 The fear that local elites and better-off farmers will divert programs away from the target group is well founded. The evaluation literature is full of case studies documenting this problem.<sup>82/</sup> The lesson to be learned from the presence of local elites in the dissemination success stories, then, is not simply that important local actors should be allowed to occupy more space in these projects. A closer look at the successes shows that two additional factors pushed them in a small-farmer direction. Briefly, (1) the activity was such that small farmers would automatically benefit from an intervention that helped larger farmers or, even, that larger farmers could not benefit without the participation of small farmers (examples follow); and (2) the more centralized state-level programs were offering strong incentives to local actors to move their activities in a small-farmer direction.

5.46 The kinds of cases in which small farmers can benefit from interventions that help medium farmers who are also local elites, as illustrated in the cases discussed so far, fall into the following categories: (1) small and medium farmers produced the same crop and in the same way--oranges in Boquim (interplanted rather than monocropped by small and medium farmers), cashew in Ceará, black beans in Irecê; (2) disease or pest problems became epidemic and could not be wiped out without the participation of all farmers--the cotton boll weevil, orange disease in Sergipe; (3) public-good type investments (particularly roads) were undertaken that benefitted all, and to which local elites would often voluntarily contribute financing, given an appropriate incentive scheme--like the Bahia road fund; and (4) better-off farmers contributed because they were offered something by the state that they could not get on their own--the barter irrigation investments of Bahia, the negotiated land transfers, the municipal land donations.

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<sup>82/</sup> See, e.g., Peek (1988) and the evaluation studies cited therein.

5.47 The story of the BNDES/FERMIN road fund (paras. 3.13-3.17) is a clear illustration of how the state structured matching incentives in a way that elicited contributions from local elites toward public-good-type investments--as well as improving the quality of these investments. Drawing local actors in distributionally desirable directions took other forms as well. The Irecê coop, for example, wanted PAPP irrigation funds for financing individual tubewell purchases by its medium-farmer members. But the Bank had insisted that financing for tubewells could be granted only in a way that served groups of smaller farmers, and not just individuals. Though the coop was disappointed at this stricture, it nevertheless enthusiastically oriented its irrigation program in a smaller-farmer direction, because this was the only way it could obtain funds for irrigation, as well as help it to attract new members.

5.48 What made the stories of successful dissemination work for small farmers, in sum, was not just the prominence of civic-minded local elites. There are too many stories to the contrary to draw that conclusion--namely, where local elites appropriated benefits, or acted against the interests of small farmers. Rather, the interests of the local elites and small farmers overlapped to certain extent--due to the nature of the crop or the activity, and the fact that more centralized public programs offered strong incentives to developmentalist local actors to make their initiatives broader. The co-participation of local actors in these state initiatives, in turn, made the outcomes better than they would have been if the state had been working on its own: the local actors had a certain kind of experience, understanding of local markets and production systems, and intense desire for their regions to prosper, that state institutions did not.

5.49 Direct through the poor. In general, small farmers themselves were conspicuously absent as demanders in these tales of "induced" dissemination. The exceptions are (1) the story of the Arcoverde research station in Pernambuco, where small-farmers invaded the research station and threatened to remain there if it did not come up with a "relevant" research agenda, and (2) the small-farmer orientation of the Boquim experiment station, influenced partly by the clamorous presence in the region of two cooperatives of small growers of oranges and associated crops. This and the following section discuss some non-coop forms of the expression of small-farmer demands.

5.50 The community-participation component (APCR) of the second generation of Northeast projects was meant to support the "grassroots" form of organizing and determining of needs that cooperatives had not been able to do. Learning from past experience, the Bank and the Brazilian government wisely decided to support associations of small farmers that were simpler than the formal, complex, and difficult cooperative form. Some APCR designers hoped the community groups would channel user demands to extension and research, though the project set up no formal mechanism for this. Interviews with research and extension field offices, however, showed that APCR or other user groups were not included in or consulted for the agenda-setting meetings of these agencies. One of the reasons this did not happen, according to some APCR proponents who favored a somewhat different design, was that the component provided funds and support for farmer groups to do their own mini-projects--community-owned grain mills, stores supplying agricultural inputs, seed banks, collective plots using intensive farming practices. Though many of these efforts were worthy, they involved a more difficult and bureaucratized organizational form, like the coops themselves, than that necessary for the kind of organized expression of needs made, for example, by the farmers who invaded the Arcoverde experiment station. Having a separate "participation" component, according to this view, did not subject the agencies carrying out the other components to the wholesome effects of user demands.

5.51 After the APCR component has more history, it may turn out that the mini-projects will have been a necessary first step in the formation of viable small-farmer groups. The component may eventually spill over its boundaries to influence more the agendas and work styles of other agencies, particularly extension and research. If this happens, this kind of effective demand-making may well have a greater impact on the productivity of small-farm agriculture than the mini-projects themselves--though via a less direct route. To achieve this end, it may have been necessary to first bring the small farmers right into the program with their own component, like a Trojan Horse. Some of the designers of the component, as it now stands, actually hoped this would happen--with the APCR being half of a "sandwich strategy" of pressure on state agencies--the federal government and the Bank being the other half.<sup>83/</sup>

5.52 Today, with the Bank's support, the PAPP program is experimenting with a new arrangement that comes closer to the user-demand approach than APCR itself--the so-called Programming by Project (PPP).<sup>84/</sup> In one or two municipios, the project unit works out an agenda for research and extension with a farmer association and then contracts those agencies for a fixed period to carry out the tasks specified therein; in some of these cases, farmers even specify the particular extension agent they want. These arrangements, though not part of the APCR component, sometimes draw on the associations of farmers formed around the APCR mini-projects. In fact, these experiments are today moving away from the original version of PPP to more crop-specific "special action" programs, because the PPP model is now seen as still too diffuse.

5.53 Though the PPP experiments are too new to be evaluated, they represent one possible approach to funding extension and research through the demand side. They bring to extension and research many of the characteristics of the successful cases of dissemination--narrower agendas, shorter time periods, clearer goals measured in terms of outputs rather than inputs, and distinct penalties for non-performance--namely, non-renewal of the contract, or strong user protests if performance is not forthcoming. They also provide the same kind of control over the work environment that project units acquired by taking over activities from other agencies. Though some Bank staff see the PPP and similar projects as inappropriately small for a multi-million dollar program like the Northeast projects, the design of these projects nevertheless indicates the kind of direction that the larger program could take.

5.54 Improving supply through demand. Agriculture and rural-development projects generally take a "supply-side" approach to research and extension. They attempt to build up these agencies' technical strengths, insist on more field tests and demonstration plots, and try to cajole them into working more collaboratively with each other. But the dissemination stories of this study show that demand-side factors were very strong in driving research to do field testing, adaptation, and dissemination. This suggests that projects should channel some of the funding for applied research to the demanders, rather than the suppliers. Either the demanders will do the applied work themselves--

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<sup>83/</sup> This term, and the phenomenon it describes, was first identified and developed by Fox (1986).

<sup>84/</sup> As often happens with successful experiments, different actors claim credit for the idea. Bank staff point to a technical-assistance unit in SUDENE of the Food and Agriculture Organization (FAO/CP), which worked closely with the SUDENE unit monitoring the Northeast programs and the Bank. Each Brazilian agency or unit working on PPP denies this, pointing to a number of other Brazilian sources of the idea.

as with Sergipe's water agency and the cistern, Pernambuco's project unit and the animal-traction implements, and the Boquim station in Sergipe; or they can contract research institutions themselves to do applied work on specific crops, varieties, or other inventions--as with the São Paulo food-processing firms and the industrial tomato, and the Bank of the Northeast and improved sheep varieties. With this approach, research could still receive project funding, but not directly. Channeling the funds to research through the demanders would make it more in the interest of research to become more applied--just as channeling funds to the road agency in Bahia through the loans to municipalities made it more in that agency's interest to keep costs down, and get projects completed on time.

5.55 There is nothing like a major research breakthrough, finally, to make research more interested in dissemination. The research agencies and individual researchers who made significant breakthroughs--like Ceará's dwarf cashew and disease-resistant banana, Boquim's improved orange, and Belém do São Francisco's industrial tomato--were very proud of them. They wanted to get their due credit and show their results off as much as possible--and hence to be conspicuously present in the dissemination effort. At these moments, and around these particular breakthroughs, research lost its reclusive character. Word of its breakthrough spread rapidly in the informal research and extension networks throughout the entire region--not just inside the state--and extension agents appeared from all over with requests for the new variety. When some of Bahia's extensionists heard about Ceará's breakthrough in cashew, they rented a truck out of their own money and drove there to buy as many of the new seedlings as they could; extensionists from the Irecê region in Bahia swarmed around the Belém-do-São-Francisco research station in Pernambuco to acquire its new fungus-resistant black bean variety, about which word had also spread quickly; when the Parasba project unit was looking for something to improve productivity among the small banana producers of the project region, they heard about Ceará's disease-resistant variety and contacted that center directly.

5.56 Whether the research center did the disseminating, or simply opened its doors to interested parties, the path of dissemination underlying these success stories usually crossed state lines. It also involved informal networks between professionals who knew each other from the university or conferences, rather than ongoing patterns of applied work or of collaboration between research and extension within any particular state. In fact, many of the stories about successful research findings and their dissemination started with a telephone call by a researcher or extensionist to a colleague in a sister institution outside the state. In fact, a majority of these calls went outside the Northeast to Piracicaba in São Paulo--where the country's most prestigious state research institute, ESALQ,<sup>85/</sup> was located. This suggests institutional "spread effects" from the richer part of the country to the poorer, contrary to the common portrayal of the Northeast as stagnant and isolated from the dynamism sweeping the rest of the country.

5.57 The cross-state paths of dissemination also revealed a pattern of implicit specialization by state research agencies--Ceará for dwarf cashew and banana, Boquim in Sergipe for oranges, Belém do San Francisco in Pernambuco for black beans and industrial tomatoes. But the model of agricultural extension and research behind the Northeast projects goes somewhat against this grain. As in several other countries, that is, each project tried to build up a self-contained research-and-extension establishment within each state, with a broad agenda of crops and activities; and each

project tried to forge a collaborative link between extension and research within that state.<sup>86/</sup> But dissemination in the successful cases involved a tense episodic interaction between extension and research (or research and research) across states and outside the Northeast. And this represented a kind of de facto specialization in certain crops or varieties by state research agencies across states, independently of what the specialized national research centers were doing.<sup>87/</sup>

5.58 Rural development projects should support these cross-state collaborations and disseminations because they represent moments when research wants to be more applied and open and extension is enthusiastic about collaborating. But state-specific project support for building up a broad-palette research and extension agency in each state, and forcing a marriage between the two, does not exploit the comparative advantage that develops among state research agencies. It does not help state research centers to spill their most impressive successes beyond state borders, and it does not encourage the informal exchanges of information between states and, particularly, between the Northeast and the more developed south, that were crucial to many of the dissemination successes. In order to encourage these kinds of cross-state exchanges, projects might make funds available to research agencies for choosing one or two of their already-proven successes and doing more applied and dissemination work with only them. This would amount to funding research centers only for activities in which they already had a built-in reason to be interested in being applied.

5.59 The idea of channeling funding to research through users in search of solutions to particular problems, and of funding dissemination efforts around particular successes, may seem to be a haphazard way of building institutional capacity in research and extension. The cases of successful dissemination, after all, must have come out of a research environment in which scientific inquiry had the "luxury" of proceeding on several fronts at once. In this vein, one of the Bank's biggest institution-building success stories in agricultural research worldwide came out of a long period of broad "supply-side" support to EMBRAPA, Brazil's nationwide research agency--which until recently had a reputation as one of the third world's best institutions in agricultural research.

5.60 Rural development projects represent quite different institution-building mechanisms than that through which the Bank supported EMBRAPA. The rural projects involved many agencies, had short time horizons, focused on one geographic area, and needed to show concrete results. All of these features made for a quite different kind of intervention than that which allowed for the attention and resources lavished by the Bank, over a long period of time, on a single institution like EMBRAPA. Strong agricultural research capacity, in sum, cannot be the by-product of rural development projects. But rural development projects provide an excellent opportunity to make

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<sup>86/</sup> Regionwide research components were included in the PAPP projects in Sergipe (US\$11.3 million) and Bahia (US\$8 million)--with CPATSA assigned a coordinating role. The bulk of the research effort of the program, however, was state specific--US\$85 million out of US\$105 million, or 82% (Table 8A). The regionwide transfer of research results under these components, moreover, did not work as well as hoped. Interestingly, CPATSA was never mentioned in the stories recounted above of out-of-state contacts of research centers for information and help.

<sup>87/</sup> Specialization in particular crops was left largely to the crop-specific research centers of the nationwide research system, EMBRAPA. There are four such centers in the Northeast--citrus in Bahia, dryland tropical agriculture in Pernambuco, cotton in Campina Grande, goats and sheep in Ceará. EMBRAPA has been the recipient of the two major Bank loans.

research and extension more responsive, and agriculture more productive, by administering strong doses of user demand to these institutions.

**5.61** The conclusions and recommendations of this study appear as paragraphs 29 to 46 of the Executive Summary.

TABLE 1: NORTHEAST AND BRAZIL  
Various Indicators

Indicator	Northeast	Brazil	Northeast as % of Brazil	Year of Data
Total Area, millions of km <sup>2</sup> (p.20) <sup>(a)</sup>	1.5	8.5	17.6%	1989
Population:				
Total, millions (p.75) <sup>(a)</sup>	42.0	147.4	28.5%	1989
Rural, millions (p.77) <sup>(a)</sup>	17.8	37.7	47.2%	1989
Economically active population (EAP):				
10 Years and older, millions (p.132) <sup>(a)</sup>	15.2	57.4	26.5%	1987
in Agriculture, millions (p.133) <sup>(a)</sup>	6.0	14.1	42.6%	1987
Manufacturing Output, Cr\$ millions				
Value Added <sup>(a)</sup>	10.4	117.3	8.8%	1984
Total Value of Production (p.378) <sup>(a)</sup>	25.1	278.6	9.0%	1984
Gross Regional Product <sup>(b)</sup>			14.5%	1980
Agricultural Output, 1977, 1979-81 <sup>(c)</sup>			21.6%	
Head of Cattle, millions (p.336) <sup>(a)</sup>	24.0	135.7	17.7%	1987
Electric Power Consumption 1000s of GWH (p.455) <sup>(a)</sup>	28.4	192.1	14.8%	1987

Other Indicators

Indicator	% in Northeast	% in Brazil	Ratio of Northeast to Brazil	Year of Data
Rural pop. as a % of total <sup>(a)</sup>	42.4%	25.6%	1.66	1989
Sectoral Shares of GDP (% of total) <sup>(d)</sup>				
Agriculture	16.3%	10.0%	1.63	1980
Industry	30.3%	38.3%	0.79	1980
Services	53.4%	51.7%	1.03	1980
Rural households with:				
Basic Sanitary Facilities <sup>(e)</sup>	21.6%	47.2%	0.46	1985
Piped Water	5.7%	27.0%	0.21	1985
Dwellings (urban and rural):				
With Electricity <sup>(f)</sup>	34.3%	60.2%	0.57	1980
% of Population Literate (5 years and older) <sup>(a)</sup>	54.6%	74.2%	0.74	1987

(a) IBGE (1989)

(b) May (1986:T.2)

(c) May (1986:T.5)

(d) WB (5/18/89: III, T.A.1.9).

(e) WB (5/27/88: II, T.55; T.56).

(f) May (1986:T.3).

TABLE 2: NORTHEAST REGION AND BRAZIL  
Distributional Indicators

Indicator		Northeast	Brazil	Ratio of Northeast to Brazil
Average monthly family income in multiples of the minimum wage of 8/80 <sup>(a)</sup>	1970	1.31	2.56	0.51
	1980	2.61	4.83	0.54
Rural mean monthly income of employed labor force (constant 1980\$Cr) <sup>(b)</sup>	1970	1,995	2,950	0.68
	1980	4,141	6,668	0.62
		107.0%	126.0%	0.85
% Change (1970-80)	1970	0.404	0.440	0.92
Gini coefficient	1980	0.470	0.554	0.85
Percent of households below poverty line (1987) <sup>(c)</sup>				
urban and rural		44.2%	23.3%	1.90
rural only		60.1%	46.3%	1.30
% Share of total family income <sup>(d)</sup> :				
in bottom 50% of households	1970	14.1%	12.1%	1.17
	1980	11.9%	12.2%	0.98
in top 10% of households	1970	49.7%	48.3%	1.03
	1980	50.0%	47.0%	1.06
Gini coefficient	1970	0.593	0.608	0.98
	1980	0.614	0.597	1.03
Distribution of land in farms (% of total) (1985) <sup>(e)</sup>				
farms < 20 hectares				
% of total farms		52.9%	66.9%	0.79
% of total land		5.5%	5.7%	0.96
farms > 100 hectares				
% of total farms		14.6%	9.8%	1.49
% of total land		74.4%	78.8%	0.94

(a) Hoffmann (1986:70)

(b) Graham et al (1987:26).

(c) Fox (1990:10,T.4).

(d) Hoffman & Kageyama (1984:21) cited in Hoffmann (1986:71).

(e) WB (5/18/89:98, T.A.2).

TABLE 3: NORTHEAST BRAZIL  
Population and Area by State (a)

State	Total Population 1000s (1)	% of Regional Total (2)	Rural Population 1000s (3)	% of Regional Total (4)	Total area 1000s km <sup>2</sup> (5)	% of Regional Total (6)
Alagoas	1,982.6	5.7%	1,006.1	5.8%	27.7	1.8%
Bahia	9,454.3	27.2%	4,794.0	27.8%	560.0	36.4%
Ceará	5,288.3	15.2%	2,477.9	14.4%	146.8	9.5%
Maranhão	3,996.4	11.5%	2,741.2	15.9%	324.6	21.1%
Paráiba	2,770.2	8.0%	1,321.2	7.7%	56.4	3.7%
Pernambuco	6,142.0	17.6%	2,358.0	13.7%	98.3	6.4%
Piauí	2,139.0	6.1%	1,241.0	7.2%	250.9	16.3%
Rio Grande do Norte	1,898.2	5.5%	783.0	4.5%	53.0	3.4%
Sergipe	1,140.1	3.3%	522.3	3.0%	22.0	1.4%
Regional Total	34,811.1	100.0%	17,244.7	100.0%	1,539.7	100.0%

Source: FIRGE (1985)

(a) Minas Gerais is not included in this table because, though three of the projects were located there and the state is contiguous with the Northeast region, it is not considered part of the Northeast -- except for a small drought-prone area where the Bank-funded project is located. Total population of the state of Minas Gerais is 14.6 million; project area population was 1 million under POLONORDESTE and 1.2 million under PAPP. The total area of Minas Gerais is 587,200 km<sup>2</sup>.

TABLE 4: MAJOR CROPS IN NORTHEAST BRAZIL

Crop	% of Total Northeast crop value <sup>(a)</sup>		% of Brazilian output <sup>(b)</sup>	
	1977 (1)	1979-81 <sup>(c)</sup> (2)	1973-75 (3)	1986-88 (4)
Cassava	20.5%	13.9%	45.6%	49.5%
Cacao	18.9%	18.6%	95.5%	82.5%
Cane	15.7%	25.3%	38.1%	27.9%
Beans	9.1%	10.7%	30.4%	29.8%
Cotton	8.6%	7.0%	35.6%	17.9%
Corn	5.1%	3.0%	9.3%	5.5%
Rice	4.9%	5.1%	13.2%	14.3%
Bananas	4.9%	4.4%	39.9%	39.0%
Tomatoes	1.9%	1.6%	23.4%	34.3%
Coconut	1.9%	1.4%	93.8%	90.6%
Sisal	1.4%	1.7%	100.0%	100.0%
Sweet Potato	1.2%	0.8%	n.a.	36.5%
Tobacco	1.2%	0.6%	22.1%	12.8%
Onions	0.5%	0.8%	13.3%	13.4%

(a) Source: May (1986:T.5).

(b) Source: based on data from FIBGE (various years).

(c) 1979-1983 were drought years in the Northeast. Data in this form not available for later years.

TABLE 5: CHANGES IN THE PRODUCTION OF FOUR MAJOR FOOD CROPS  
NORTHEAST AND BRAZIL, 1973-1988<sup>(a)</sup>

Year	Compounded Annual Growth Rates of Total Output <sup>(b)</sup>							
	Beans		Corn		Cassava		Rice	
	<u>Northeast</u>	<u>Brazil</u>	<u>Northeast</u>	<u>Brazil</u>	<u>Northeast</u>	<u>Brazil</u>	<u>Northeast</u>	<u>Brazil</u>
1973/75-1976/78	-1.8%	-1.0%	-0.3%	2.6%	3.6%	0.2%	11.4%	6.2%
1984/86-1986/88	-4.9%	-2.7%	-6.8%	4.8%	0.0%	0.3%	1.6%	4.8%
1873/75-1986/88	0.1%	0.1%	-0.8%	3.3%	0.1%	-0.5%	3.8%	3.2%

  

	Compounded Annual Growth Rates of Yields (tons per hectare) <sup>(b)</sup>							
	<u>1973/76-1976/78<sup>(c)</sup></u>	<u>1984/86-1986/88</u>	<u>1973/76-1986/88</u>	<u>1973/76-1976/78<sup>(c)</sup></u>	<u>1984/86-1986/88</u>	<u>1973/76-1986/88</u>	<u>1973/76-1976/78<sup>(c)</sup></u>	<u>1984/86-1986/88</u>
1973/76-1976/78 <sup>(c)</sup>	-2.8%	-2.0%	-0.8%	0.2%	-0.7%	-0.9%	1.9%	-0.7%
1984/86-1986/88	-7.9%	-3.5%	-10.0%	1.6%	-0.7%	0.0%	-5.3%	0.0%
1973/76-1986/88	-2.5%	-1.5%	-2.0%	1.5%	-0.3%	-0.1%	-1.1%	1.5%

TABLE 5A: OUTPUT AND YIELDS OF FCJR MAJOR FOOD CROPS,  
NORTHEAST AND BRAZIL, 1973-1988<sup>(a)</sup>

Year	Output (1000s of tons, 3-year moving averages)							
	Beans		Corn		Cassava		Rice	
	<u>Northeast</u>	<u>Brazil</u>	<u>Northeast</u>	<u>Brazil</u>	<u>Northeast</u>	<u>Brazil</u>	<u>Northeast</u>	<u>Brazil</u>
1973/75	682	2,244	1,464	15,777	11,608	25,442	921	6,916
1976/78	632	2,154	1,454	17,458	13,398	25,690	1,415	8,760
1984/86	812	2,485	1,605	21,435	11,655	23,292	1,470	9,368
1986/88	695	2,279	1,298	24,704	11,683	23,540	1,548	10,766

  

	Yields (tons per hectare, 3-year moving averages)							
	<u>1973/76<sup>(c)</sup></u>	<u>1976/78</u>	<u>1984/86</u>	<u>1986/88</u>	<u>1973/76<sup>(c)</sup></u>	<u>1976/78</u>	<u>1984/86</u>	<u>1986/88</u>
	0.37	0.52	0.58	0.42	1.51	10.95	12.38	1.30
1973/76 <sup>(c)</sup>	0.37	0.52	0.58	0.42	1.51	10.95	12.38	1.30
1976/78	0.33	0.48	0.60	0.44	1.52	10.64	11.96	1.39
1984/86	0.34	0.46	0.60	0.44	1.79	10.75	12.26	1.30
1986/88	0.26	0.42	0.44	0.44	1.87	10.56	12.26	1.11

Source: based on FIBGE (various years).

(a) The drought years of 1979-1983 have been excluded.

(b) Calculations are based on 3-year moving averages (See Table 5A)

(c) Yields for the 1973/76 period are based on simple averages of 1973 and 1976 data because 1974 and 1975 acreage data were not available.

TABLE 6: NORTHEAST BRAZIL RURAL DEVELOPMENT PROJECTS - Basic Information

PROJECT	WORLD BANK LOAN					TOTAL PROJECT (APPRAISED)					Project area 1000s km <sup>2</sup>	
	Value (US\$ Million)					Value (US\$ Million)			% WB loan in total <sup>(c)</sup>	Direct benefit families 1000s <sup>(a)</sup>		
	Number (1)	Date (2)	Current \$ (3)	1988\$ (4)	Deflator <sup>(b)</sup> (5)	Current \$ (6)	1988\$ (7)	(8)				
<b>POLONORDESTE</b>												
Rio Grande do Norte	1195	12/75	12.0	23.9	0.503	30.0	59.6	40.0%	15.0	21.0		
Minas Gerais I <sup>(d)</sup>	1362	01/77	42.0	78.5	0.635	139.0	259.8	30.2%	25.5	35.0		
Ceará/Ibiapaba	1488	04/77	17.0	30.8	0.552	42.2	76.4	34.2%	5.8	4.8		
Paraíba/Brejo	1537	03/79	24.0	38.8	0.619	67.3	106.7	35.7%	7.4	1.6		
Bahia/Paraguaçu	1589	05/78	37.0	62.3	0.593	106.6	179.7	34.7%	17.0	60.8		
Sergipe/Tab.Sul.	1714	05/79	26.0	40.3	0.645	76.0	117.9	34.2%	8.4	6.0		
Pernambuco/Agr.Set.	1728	05/79	40.0	62.0	0.645	116.7	180.9	34.3%	15.5	10.8		
Minas Gerais II	1877	06/80	63.0	89.4	0.705	184.6	281.8	34.1%	30.0	61.0		
Ceará II	1924	12/80	56.0	75.9	0.738	163.2	221.1	34.3%	60.0	146.8		
Piauí	2015	04/81	29.0	37.6	0.772	84.4	109.3	34.4%	11.3	24.3		
Maranhão	2177	05/82	42.7	52.0	0.821	122.2	148.8	34.9%	38.8	50.7		
Bahia II	2269	04/83	67.8	79.5	0.853	173.4	203.3	39.1%	45.0	76.6		
Sub-Total average <sup>(e)</sup>	12		456.5	670.9		1,306.6	1,927.5	35.0%	279.8	499.4		
			38.0	55.9		108.8	160.6	35.5%	23.3	41.6		
<b>PAPP</b>												
Sergipe	2523	09/85	61.3	67.2	0.912	130.3	14629	47.0%	17.5	16.3		
Rio Grande do Norte	2524	04/85	61.4	67.3	0.912	136.2	149.3	41.1%	35.0			
Bahia	2761	09/86	171.0	182.7	0.936	356.2	380.6	48.0%	80.0	285.6		
Piauí	2762	09/86	78.0	83.3	0.936	160.3	171.3	48.2%	65.0	145.4		
Pernambuco	2718	03/86	92.0	99.6	0.924	188.4	203.9	48.6%	73.0	62.0		
Ceará	2763	09/86	122.0	130.3	0.936	264.3	271.7	48.0%	122.8	144.3		
Paraíba	2860	05/87	60.0	62.0	0.967	123.9	128.1	48.4%	37.8	25.6		
Minas Gerais	2861	05/87	65.0	56.9	0.967	113.5	117.4	48.5%	38.7	120.7		
Maranhão	2862	05/87	84.0	86.9	0.967	172.3	178.2	48.8%	73.0	130.7		
Alagoas	2863	05/87	42.0	43.4	0.967	86.4	89.3	48.6%	12.4	15.0		
Sub-Total average <sup>(e)</sup>	10		826.7	879.7		1,721.8	1,832.6	48.0%	672.5	925.6		
			82.7	88.0		172.2	183.3	48.0%	57.5	102.8		
STATE PROJECT TOTAL average <sup>(e)</sup>	22		1,283.2	1,550.6		3,027.4	3,760.1	42.4%	855.0	1,424.9		
			60.4	71.8		140.5	171.96	41.8%	40.4	72.2		
PAPP Land Titling/res.	2593	11/84	100.0	112.7	0.887	250.0	281.8	40.0%	100.0			
<b>POLONORDESTE/PAPP TOTAL</b>	23		1,383.2	1,663.3		3,277.4	4,042.0	42.0%	955.0	1,424.9		

Source: All values taken from the original Staff Appraisal Reports (SARs), Projects Department, Latin America and Caribbean Regional Office, WB. For POLONORDESTE: World Bank (11/11/75; 12/28/76; 4/29/77; 5/19/78; 3/10/79; 5/15/79; 5/22/79; 5/30/80; 11/11/80; 4/16/81; 5/21/82; 4/1/83). For PAPP: WB (3/12/85; 4/8/85; 5/22/86; 9/26/86a; 9/26/86b; 9/26/86c; 5/26/87a; 5/26/87c; 5/26/87d).

(a) Direct beneficiary families are those farm families that benefit directly from the agricultural components, such as research, land and marketing; Piauí includes direct beneficiaries who are fishermen. Indirect beneficiaries were not included because of double counting in the appraisal reports and inconsistency between reports as to types of indirect beneficiaries included.

(b) IMF GNP deflator (1988 = 100), IMF (1989:724). Year of deflator is based on the date of project appraisal, rather than the loan date. For those projects appraised in the first three months of a year, the deflator used was an average of the year of the appraisal and the prior year's deflator. Similarly, for projects appraised in the last three months of a year, the deflator is an average of that year and the subsequent year's deflator. The annual deflators are as follows: 1975, .488; 1976, .516; 1977, 0.552; 1978, 0.593; 1979, 0.645; 1980, 0.705; 1981, 0.772; 1982, 0.821; 1983, 0.853; 1984, 0.887; 1985, 0.912; 1986, 0.936; 1987, 0.967.

(c) Percentages calculated on the basis of current US\$; slight differences in percentages based on constant dollars due to rounding errors.

(d) The Minas Gerais projects are located in a small drought-prone area of the state; because the state of Minas Gerais is not considered part of the Northeast region, it is not included in Table 1-5, which provide regional data.

(e) Simple averages; weighted averages are not significantly different.

TABLE 7: NORTHEAST BRAZIL RURAL DEVELOPMENT PROJECTS  
Appraised and Actual Unit Costs <sup>(a)</sup>

PROJECT	TOTAL COSTS		DIRECT BENEFICIARY FAMILIES <sup>(b)</sup>					PROJECT AREA	
	APPRaised US\$1988 millions (1)	ACTUAL US\$1988 millions (2)	NUMBER		COSTS PER FAMILY		AREA Km2 1000s (8)	COSTS PER MK2 Appraised US\$ 1988 (1/8)	
			Appraised 1000s (3)	Actual 1000s (4)	Actual as % of Appraised (4/3)	Appraised US\$1988 (1/3)	Actual US\$1988 (2/4)		
<b>POLONORDESTE</b>									
Rio Grande Do Norte	59.6	60.2	15.0	13.0	86.9%	4,300	4,992	21.0	3,071
Minas Gerais I	259.8	257.9	25.5	27.8	108.9%	10,188	9,290	35.0	7,423
Ceará/Ibiapaba	76.4	42.8	5.8	8.7	150.5%	16,569	4,897	4.8	20,021
Paraíba/Brejo	108.7	39.9	7.4	7.4	100.0%	16,459	6,047	1.6	77,089
Bahia/Paraguaçu	179.7	118.9	17.0	21.0	123.7%	10,571	5,654	60.8	2,957
Sergipe/Tab.Sul	117.9	50.2	8.4	5.3	62.7%	14,607	9,940	6.0	20,369
Pernambuco/Agr.Set.	180.9	159.9	15.5	23.0	148.0%	12,131	7,241	10.8	17,418
Minas Gerais II	261.8	98.3	30.0			8,727		61.0	4,292
Ceará II <sup>(e)</sup>	221.1	128.5	60.0	58.3	97.2%	4,030	2,203	146.8	1,647
Piauí	109.3	51.5	11.3	8.4	74.2%	10,602	6,139	24.3	4,930
Maranhão	148.8		38.8			4,077		50.7	3,124
Bahia II	203.2		45.0			4,693		76.6	2,757
Total simple average weighted average <sup>(f)</sup>	1,927.3 160.6	1,008.1 100.8	279.8 23.3		88.3% 105.8%	108,705 6,889 9,059	47,112 5,889 4,617	499.4 41.6	165,098 4,057 13,758
<b>PAPP</b>									
Sergipe	146.9		17.5			8,394		16.3	9,018
Rio Grande do Norte	153.6		35.0			4,387			
Bahia	385.5		80.0			4,819		265.6	1,451
Piauí	173.5		65.0			2,669		145.4	1,193
Pernambuco	203.9		73.0			2,793		62.0	3,288
Ceará	275.2		122.8			2,241		144.3	1,907
Paraíba	128.1		37.8			3,390		25.6	5,011
Minas Gerais	161.1		38.7			4,163		120.7	1,335
Maranhão	178.2		73.0			2,440		130.7	1,364
Alagoas	89.3		32.4			2,758		15.0	5,955
Total simple average weighted average <sup>(f)</sup>	1,895.3 189.5		575.2 57.5			38,054 3,805 3,295		925.6 102.8	30,521 3,391

Source: same as Table 6.

(a) A "blank" indicates that data were not available.

(b) IMF GNP deflator (1988 = 100) (IMF 1989:724). See Table 6, footnote (b) for explanation of calculations.

(c) Direct beneficiary families: see Table 6, footnote (c).

(d) The actual size of the project area is not available.

(e) The Ceará II project covered the entire state.

(f) Reported only where significantly different than simple average.

TABLE 8: NORTHEAST BRAZIL RURAL DEVELOPMENT PROJECTS

Appraised and Actual Expenditures by Component for Eight POLONORDESTE Projects  
(US\$ Current millions)

Project Component <sup>(a)</sup>	Total Expenditure				Actual as % of appraised component (5)	
	Appraised		Actual			
	Total Value (1)	Component as % of project (2)	Total Value (3)	Component as % of project (4)		
Rural credit	144.87	26.8%	71.90	18.0%	49.6%	
Feeder & access roads <sup>(b)</sup>	111.48	20.6%	75.10	18.8%	67.4%	
Rural extension <sup>(c)</sup>	73.60	13.6%	80.94	20.2%	110.0%	
Land related activities <sup>(d)</sup>	57.59	10.7%	28.04	7.0%	48.7%	
Project administration <sup>(e)</sup>	32.78	6.1%	50.48	12.6%	154.0%	
Water resources/supply <sup>(f)</sup>	29.19	5.4%	21.68	5.4%	74.3%	
Education and training	29.14	5.4%	23.02	5.7%	79.0%	
Health and other <sup>(g)</sup>	20.60	3.8%	11.73	2.9%	57.0%	
Other ag. services <sup>(h)</sup>	18.90	3.5%	12.48	3.1%	66.0%	
Marketing activities <sup>(i)</sup>	13.20	2.4%	15.82	4.0%	119.8%	
Agricultural research	9.07	1.7%	9.21	2.3%	101.5%	
<b>Total baseline costs<sup>(j)</sup></b>	<b>540.4</b>	<b>100.0%</b>	<b>400.4</b>	<b>100.0%</b>	<b>74.1%</b>	

Sources: for appraised data, same as Table 6. For actual data, /Project Completion Reports, Projects Dept., Latin America and Caribbean Regional Office, World Bank: WB (6/30/86; 6/2/87; 6/24/88; 6/26/89; 11/21/89).

- (a) Includes Rio Grande do Norte, Ceará/Ibiapaba, Paraíba/Brejo, Bahia/Paraguaçu, Sergipe/Tabuleiros Sul, Pernambuco/Agrreste Setentrional, Piauí, and Ceará II. As of August, 1990, Project Completion Reports and actual expenditure data were not yet available for Maranhão and Bahia II. Because the component categories and sub-categories vary somewhat in the POLONORDESTE projects, some categories have been recombined to facilitate comparison across projects. Components are listed in descending order of importance of appraised value.
- (b) Includes rural electrification in the Ceará project only, amounting to 53% of appraised costs and 58% of actual costs of road category in Ceará.
- (c) Includes agricultural extension, social extension, and farmer training.
- (d) Includes land titling (Rio Grande do Norte, Paraíba, Bahia, Sergipe, Ceará II) and land purchase (Sergipe, Piauí).
- (e) Includes project monitoring, evaluation, administration, and preparation.
- (f) Includes water resources/supply and conservation (Pernambuco, Piauí); irrigation (Bahia, Piauí, Ceará II); multipurpose dams (Bahia); and inland fisheries (Rio Grande do Norte, Piauí).
- (g) Includes health and sanitation in Bahia, Rio Grande do Norte, Ceará, Paraíba, Sergipe, Pernambuco, and Ceará II.
- (h) Includes field experimentation (Ceará, Ceará II), mechanization services (Ceará, Bahia), seed production (Rio Grande, Pernambuco), farm development (Paraíba), non-farm enterprises (Pernambuco), and small scale enterprises (Paraíba, Ceará II).
- (i) Includes storage (Bahia), cooperative support (Ceará, Bahia, Pernambuco, Ceará II), marketing and cooperative support (Rio Grande, Sergipe), marketing (Sergipe, Pernambuco, Piauí, Ceará II), and support for small communities (Piauí).
- (j) Total Baseline costs exclude: miscellaneous unallocated funds, physical contingencies, and price contingencies. See Table 8A for these costs.

TABLE 8A: NORTHEAST BRAZIL RURAL DEVELOPMENT PROJECTS

Appraised Expenditures by Component, POLONORDESTE and PAPP  
(US\$ current millions)

Project Component	Total Appraised Expenditures <sup>(a)</sup>			
	POLONORDESTE <sup>(b)</sup>		PAPP <sup>(c)</sup>	
	Total Value	Component as % of baseline costs	Total value	Component as % of baseline costs
Rural credit	179.0	23.2%	427.2	30.0%
Feeder & access roads	151.6	19.7%		
Rural extension	104.4	13.6%	345.1	24.2%
Land related activities <sup>(d)</sup>	121.6	15.8%		
Project administration	45.4	5.9%	139.9	9.8%
Water resources/supply <sup>(e)</sup>	40.8	5.3%	164.8	11.6%
Education & training	40.2	5.2%		
Health and other	30.6	4.0%		
Other ag. services	23.5	3.0%		
Marketing activities	16.6	2.2%	33.8	2.4%
Agricultural research <sup>(f)</sup>	16.7	2.2%	90.4	6.4%
APCR (Support/small comm.) <sup>(g)</sup>			221.9	15.6%
Sub-total: baseline costs	770.3	100.0%	1,423.1	100.0%
Physical contingencies	55.1		26.3	
Price contingencies	183.0		234.4	
Regional components <sup>(h)</sup>			43.0	
<b>TOTAL PROJECT COSTS<sup>(i)</sup></b>	<b>1,008.4</b>		<b>1,726.8</b>	

Source: same as Table 6.

(a) A "blank" indicates no funds included in that category.

(b) Includes ten POLONORDESTE projects in the eight states of Rio Grande do Norte, Ceará (two projects), Paraíba, Bahia (two projects), Sergipe, Pernambuco, Piauí, and Maranhão. For POLONORDESTE projects only: because the component categories and sub-categories vary somewhat from project to project, some categories have been recombined to facilitate comparison across projects. See footnotes to Table 8 for an explanation.

(c) Includes ten PAPP projects in the ten northeastern states (including Alagoas and Minas Gerais in addition to the eight states above).

(d) In PAPP, land activities were combined in a separate region-wide land titling project (US\$250 million).

(e) In PAPP, the water resources component funded primarily irrigation, but included some funds for inland fisheries and drinking water supply.

(f) The PAPP total in this category includes US\$1.7 million for an environmental protection component in the Maranhão project.

(g) The APCR component (Apoio para Pequenas Comunidades Rurais) was added under PAPP; it is also referred to as the community-participation component.

(h) This includes funds for regional agricultural research in the Bahia (US\$8 million) and Sergipe (US\$11.3 million) Appraisal Reports (SARs) and funds for regional program coordination (US\$23.7 million) in the Sergipe SAR.

(i) These totals differ from those in Table 6 because data for the two PLONORDESTE projects in Minas Gerais are not included and because there are some discrepancies in the totals by component versus by project in the SARs.

TABLE 8B: NORTHEAST BRAZIL RURAL DEVELOPMENT PROJECTS

Number of Extension Staff by Project  
POLONORDESTE and PAPP

Project	New Staff			
	Appraised <sup>(a)</sup>		Actual <sup>(b)</sup>	
	Agri. extension	APCR <sup>(c)</sup>	(agri. extension)	Appraised as % of actual (2/1)
	(1)	(2)	(3)	(2/1)
<b>POLONORDESTE</b>				
Rio Grande do Norte	n.a.		141	n.a.
Ceará/Ibiapaba	n.a.		225	n.a.
Paraíba/Brejo	62		77	124.2%
Bahia/Paraguaçu	223		205	91.9%
Sergipe/Tab.Sul	61		85	139.3%
Pernambuco/Agr.Set.	172		179	104.1%
Ceará II	378		556	147.1%
Piauí	130		155	119.2%
Maranhão	133		n.a.	n.a.
Bahia II	211		n.a.	n.a.
<b>Total</b>	<b>1,370</b>		<b>1,623</b>	<b>121.0%</b>
 <b>PAPP</b>				
Sergipe	225		18	
Rio Grande do Norte	390		25	
Bahia	915		90	
Piauí	530		23	
Pernambuco	640		42	
Ceará	846		46	
Paraíba	720		18	
Maranhão	240		24	
Minas Gerais	380		32	
Alagoas	280		18	
<b>Total</b>	<b>5,165</b>		<b>357</b>	

(a) Source: same as Table. 6.

(b) Source: same as Table 8. Actual data not yet available for PAPP.

(c) APR is Support to Small Rural Communities (Apoio para Pequenas Comunidades Rurais).

TABLE 8C: NORTHEAST BRAZIL RURAL DEVELOPMENT PROJECTS

Drinking Water Supply, PAPP  
(Appraised Expenditures)

State	Drinking water supply		
	Current US\$ millions	% of Water Component <sup>(a)</sup>	% of Project Baseline Costs
Sergipe	3.1	34.1%	3.3%
Rio Grande	2.9	15.9%	2.2%
Bahia	6.7	23.5%	1.9%
Piauí	1.6	8.7%	1.0%
Pernambuco	1.7	9.7%	0.9%
Ceará	2.8	12.5%	1.1%
Paraíba	2.4	11.0%	1.9%
Minas Gerais	2.0	9.0%	1.8%
Maranhão	2.8	14.3%	1.6%
Alagoas	1.5	100.0%	1.7%
Total	27.6	15.3%	1.6%

Source: see Table 6.

(a) The remaining sub-components of the water component include: public irrigation (67.7% of total water component), feasibility studies for irrigation (6.6%), fisheries (5.9%), and institution building (4.0%).

**TABLE 8D: NORTHEAST BRAZIL RURAL DEVELOPMENT PROJECTS**  
**Appraised Costs by Component by State, PAPP**  
**(US\$ current millions)**

PROJECT COMPONENT	Total Value	Sergipe	Rio Grande	Bahia	Piauí	Pernambuco	Ceará	Paraíba	Minas Gerais	Maranhão	Alagoas	1
Water Resources	166.5	9.2	18.4	28.5	18.6	17.7	16.7	19.1	19.9	16.9	1.5	1
Agricultural Research (a)	90.4	5.9	7.4	27.7	7.7	7.3	7.0	7.9	5.2	9.6	4.7	1
Rural Extension	345.2	16.6	28.9	72.6	35.2	37.4	54.3	25.2	23.9	30.8	20.3	1
Rural Investment Credit	427.2	15.1	23.8	74.8	41.2	49.6	67.3	37.7	32.9	50.4	34.4	1
Marketing	33.8	2.5	4.0	11.7	1.6	5.2	2.5	2.4	1.0	2.6	0.3	1
Support/Small Communities	221.9	9.0	10.4	42.2	21.8	26.6	41.4	14.4	18.1	25.9	12.1	1
Project Administration	139.9	6.0	10.1	35.7	9.9	16.9	23.9	8.8	5.7	14.0	8.9	1
<b>SUB-TOTAL: Baseline Costs</b>	<b>1,424.9</b>	<b>64.3</b>	<b>103.0</b>	<b>293.2</b>	<b>136.0</b>	<b>160.7</b>	<b>213.1</b>	<b>115.5</b>	<b>106.7</b>	<b>150.2</b>	<b>82.2</b>	1
Physical Contingencies	24.5	1.5	2.4	3.8	2.0	1.7	4.5	2.8	1.8	3.1	0.9	1
Price Contingencies	229.4	29.5	30.8	51.2	22.3	26.0	36.7	5.6	5.0	19.0	3.3	1
Regional Components (b)	43.0	35.0		8.0								1
<b>TOTAL PROJECT COSTS</b>	<b>1,721.8</b>	<b>130.3</b>	<b>136.2</b>	<b>356.2</b>	<b>160.3</b>	<b>188.4</b>	<b>254.3</b>	<b>123.9</b>	<b>113.5</b>	<b>172.3</b>	<b>86.4</b>	1
(Components as a percent of project baseline costs)												
Water Resource Development	11.7%	14.3%	17.9%	9.7%	13.7%	11.0%	7.8%	16.5%	18.7	11.3%	11.3%	1
Agricultural Research (a)	6.3%	9.2%	7.2%	9.4%	5.7%	4.5%	3.3%	6.8%	4.9	6.4%	6.4%	1
Rural Extension	24.2%	25.8%	28.1%	24.8%	25.9%	23.3%	25.5%	21.8%	22.4	20.5%	20.5%	1
Rural Investment Credit	30.0%	23.5%	23.1%	25.5%	30.3%	30.9%	31.6%	32.6%	30.8	33.6%	33.6%	1
Marketing	2.4%	3.9%	3.9%	4.0%	1.2%	3.2%	1.2%	2.1%	0.9	1.7%	1.7%	1
Support to Small Communities	15.6%	14.0%	10.1%	14.4%	16.0%	16.6%	19.4%	12.5%	17.0	17.2%	17.2%	1
Project Administration	9.8%	9.3%	9.8%	12.2%	7.3%	10.5%	11.2%	7.6%	5.3	9.3%	9.3%	1
<b>SUB-TOTAL: Baseline Costs</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0</b>	<b>100.0%</b>	<b>100.0%</b>	1

Source: same as Table 6.

(a) Includes US\$1.7 million for environmental protection in the Maranhão project.

(b) Funds for regional development and coordination from Sergipe and Bahia SARs.

TABLE 9: NORTHEAST BRAZIL RURAL DEVELOPMENT PROJECTS  
 Indicators of Completion  
 (US\$ current millions)

PROJECT	YEARS TO COMPLETION		EXPENDITURES <sup>(a)</sup>					
	Expected Years (1)	Actual years (2)	WORLD BANK LOAN			TOTAL PROJECT		
			Appraised <sup>(b)</sup> (3)	Actual <sup>(c)</sup> (4)	% Actual to Appraised (5)	Appraised <sup>(b)</sup> (6)	Actual <sup>(d)</sup> (7)	% Actual to Appraised (8)
<b>POLO NORDESTE</b>								
Rio Grande do Norte	5.0	9.0	12.0	11.2	93.3%	30.0	30.3	101.0%
Ceará/Ibiapaba	5.0	8.5	17.0	9.1	53.5%	53.1	23.5	44.4%
Paraíba/Brejo	6.0	8.5	24.0	11.5	47.9%	67.3	24.7	36.7%
Bahia/Paraguaçu	5.0	7.5	37.0	26.4	71.4%	106.6	70.5	66.1%
Sergipe/Tab.Su.	5.0	6.5	26.0	10.1	38.8%	76.0	32.4	42.6%
Pernambuco/Agr.Sat.	5.0	7.5	40.0	27.1	67.8%	116.7	103.1	88.3%
Ceará II	5.0	7.0	56.0	48.2	86.1%	163.2	86.7	53.1%
Pisuí	5.0	5.5	29.0	17.0	58.6%	84.4	36.3	43.0%
Maranhão	5.0	6.5	42.7	29.9	70.0%	122.2		
Bahia II	5.0	5.5	67.8	18.9	27.9%	173.4		
Sub-Total <sup>(e)</sup>	51.0		351.5	209.4		993.0	407.6	
average <sup>(e)</sup>	5.1	7.2			59.6%			58.5%
<b>PAPP</b>								
Sergipe	8.0		61.3			146.9		
Rio Grande do Norte	8.0		61.4			153.6		
Bahia	8.5		171.0			385.5		
Piauí	8.5		78.0			173.5		
Pernambuco	8.5		92.0			203.9		
Ceará	8.5		122.0			275.2		
Paraíba	8.5		60.0			128.1		
Minas Gerais	8.5		55.0			113.5		
Maranhão	8.5		84.0			178.2		
Alagoas	8.5		42.0			89.3		
Sub-Total <sup>(e)</sup>	84.0		826.7			1,847.7		
average <sup>(e)</sup>	8.4		82.7			184.8		

(a) A "blank" indicates that data are not available.

(b) Source: same as Table 6.

(c) Source: WB (8/31/88).

(d) Source: same as Table 8.

(e) Simple averages; weighted averages are not significantly different.

TABLE 9A: NORTHEAST BRAZIL RURAL DEVELOPMENT PROJECTS

Appraised and Actual Economic Rates of Return

Project	Appraised ERR <sup>(a)</sup>	Actual ERR <sup>(b)</sup>	Time period of ERR (yrs)	Ratio of Appraised to Actual
POLONORDESTE				
Rio Grande do Norte	15.0%	8.0%	20	0.53
Ceará/Ibiapaba	19.0%	n.a.		
Paraíba/Brejo	32.0%	n.a.		
Bahia/Paraguaçu	15.0%	10.7%	15	0.71
Sergipe/Tab.Sul	27.0%	13.2%	25	0.49
Pernambuco/Agr.Set.	22.0%	n.a.		
Ceará II	19.0%	n.a.		
Piauí	20.0%	10.6%	20	0.53
Maranhão	22.0%	n.a.		
Bahia II	16.0%	n.a.		
Average	20.7%	10.6%		0.57

(a) Source: same as Table 6.

(b) Source: same as Table 8. Project Completion Reports calculated rates of return for only four of the eight projects; data were not sufficient to calculate the rates in the remaining four cases. As of August, 1990, Project Completion Reports and actual data were not available for Maranhão and Bahia II.

TABLE 10: RURAL POPULATION DENSITIES IN NORTHEAST BRAZIL  
BY STATE AND BY PROJECT AREA

State	Rural Population Density <sup>(a)</sup> (persons per km <sup>2</sup> )		
	State <sup>(b)</sup> (1)	Project area <sup>(c)</sup> (2)	Year <sup>(d)</sup> (3)
<b>FOLONORDESTE</b>			
Rio Grande do Norte	15.3	12.8	1970
Ceará <sup>(e)</sup>	19.9	17.5	1970/80
Paraíba	27.8	91.4	1976
Bahia <sup>(e)</sup>	8.3	10.8	1970/80
Sergipe	23.0	25.1	1976
Pernambuco	23.9	46.8	1970
Piauí	4.8	15.5	1975
Maranhão	8.5	18.2	1980
Simple Average	16.4	29.8	
<b>PAPP</b>			
Sergipe	23.7		1985
Rio Grande do Norte	14.8		1985
Bahia	8.6	8.6	1980
Piauí	4.9	5.4	1980
Pernambuco	24.0		1985
Ceará	16.9	16.6	1980
Paraíba	23.4		1980
Minas Gerais	7.5	5.2	1980
Maranhão	8.4	9.4	1980
Alagoas	36.3		1980
Simple Average	13.2	9.1	

(a) Rural population divided by total area; data on rural area not available, so that these data are underestimates.

(b) Source: FIBGE (various years).

(c) Source: same as Table 6. A "blank" indicates that the data were not available.

(d) The year used as a base year for calculating population densities, as detailed in the Staff Appraisal Reports (SARs). 1970 and 1980 are census years; figures from other than census years are estimates based on the census. Years vary in order to be consistent with the data on population in the project area taken from the SARs.

(e) Ceará and Bahia are calculated as a simple average of the population density in 1970 referred to in the SAR for the first Ceará and Bahia projects and the population density in 1980 referred to in the SARs for the second projects in those states.

TABLE 11: NORTHEAST BRAZIL RURAL DEVELOPMENT PROJECTS  
Significance of Project Area in the State

PROJECT	DIRECT BENEFICIARIES <sup>(a)</sup> (INDIVIDUALS) AS % OF:				PROJECT AREA <sup>(b)</sup> AS % OF STATE:		
	Project area Rural Pop. (1)	Project Area Total Pop. (2)	State Rural Pop. (3)	State Total Pop. (4)	Rural Pop. (5)	Total Pop. (6)	Area (7)
<b>POLONORDESTE</b>							
Rio Grande do Norte	28.0%	18.1%	9.2%	4.8%	32.9%	26.8%	39.6%
Ceará/Ibiapaba	20.5%	16.5%	1.1%	0.7%	5.5%	4.0%	3.3%
Paraíba/Brejo	25.6%	19.8%	2.4%	1.4%	6.0%	6.9%	2.8%
Bahia/Paraguaçu	12.4%	8.6%	1.9%	1.1%	15.6%	13.1%	10.9%
Sergipe/Tab.Sul.	27.7%	18.4%	8.3%	4.2%	29.9%	23.0%	27.0%
Pernambuco/Agr.Set.	15.3%	9.5%	3.3%	1.5%	21.6%	15.9%	11.0%
Ceará II <sup>(c)</sup>	9.3%	5.1%	9.2%	5.1%	100.0%	100.0%	100.0%
Piauí	15.0%	7.3%	4.7%	2.8%	31.6%	38.7%	9.7%
Maranhão	21.0%	16.2%	6.9%	4.8%	33.1%	29.5%	15.4%
Bahia II	28.8%	20.3%	4.6%	2.3%	0.7%	11.5%	13.7%
Sub-Total simple average	20.4%	14.0%	5.2%	2.9%	27.7%	26.9%	23.3%
<b>PAPP</b>							
Sergipe		14.0%	16.8%	7.7%		48.1%	74.1%
Rio Grande do Norte		20.4%		8.3%		40.6%	
Bahia	17.5%	10.4%	8.3%	4.2%	47.8%	36.1%	47.4%
Piauí	41.4%	18.2%	26.2%	13.4%	63.3%	73.5%	58.0%
Pernambuco		11.0%	15.5%	5.9%		49.3%	63.1%
Ceará	25.6%	11.5%	24.8%	11.6%	97.0%	90.7%	98.3%
Paraíba		14.1%	14.3%	6.8%		48.2%	45.4%
Minas Gerais	30.9%	16.1%	4.4%	1.4%	14.2%	8.2%	20.7%
Maranhão	29.6%	20.1%	13.3%	9.1%	45.0%	39.0%	40.2%
Alagoas		17.9%	16.1%	8.2%		40.3%	54.1%
Sub-Total simple average	29.0%	15.4%	15.5%	7.7%	53.4%	47.4%	55.7%

Source: For project area population, same as Table 6.  
For state population, FIBGE (various years). The base year for population figures varies from state to state, depending upon the year in which the Staff Appraisal Report was written. Population figures for POLONORDESTE projects are based on the following years:

Rio Grande do Norte, Ceará/Ibiapaba, Bahia/Paraguaçu, Pernambuco/Agreste Set. = 1970;

Piauí = 1975;

Paraíba/Brejo, Sergipe/Tabuleiros Sul = 1976;

Ceará II, Maranhão, Bahia II = 1980.

For PAPP projects, the base years are: Sergipe, Rio Grande do Norte, Pernambuco = 1985; for the maining projects, 1980.

(a) Appraised rather than actual figures were used so as to capture the political significance of the project at its inception. Individual beneficiaries are calculated as the number of direct beneficiary families (see Table 6, note b) multiplied by 5.

(b) Project area rural population (pop.), total pop., area as % of state rural pop., total pop., area.

(c) Ceará II: unlike the rest of the projects, this project covered the entire state, which explains the 100% figures in columns 5-7.

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Office of the President of the Republic  
Secretariat for Regional Development  
Oficio SDR-PR/DPA/No. 106/91

Brasilia, August 30, 1991

Dr. Graham Donaldson  
Chief, Agriculture and Human Development Division  
Operations Evaluation Department  
World Bank

Dear Sir:

I am writing in reference to the draft report on the study entitled "New Lessons from Old Projects: The Dynamics of Rural Development in Northeast Brazil" sent by the Bank to the International Affairs Department of the Ministry of the Economy, Finance and Planning, with a view to analysis and comments by the Government of Brazil.

In that connection, the Secretariat for Regional Development of the Office of the President which, at the federal level, is responsible for planning, coordinating, supervising and monitoring regional development programs and projects, has a number of considerations to raise:

1. As stated in your fax of June 26, the report in question does not follow the usual approach used by the World Bank in analyzing Bank-financed projects. Nevertheless, SDR-PR considers that such an evaluation can foster the adoption of measures that improve the performance of new projects to be developed with Bank participation in the near future, provided that its approach be refined.

2. To that end, below are the main comments in the technical arena from this Department with regard to the above-referenced document:

2.1 Few lessons can be drawn from the report for avoiding problems in the future, since the generalization and incomplete identification do not allow for the adoption of corrective measures.

2.2 As an evaluation of regional development programs, the report is inadequate, to the extent that it does not consider the economic, political, social and cultural context of the region or the country.

2.3 It would also be very beneficial to do an evaluation of projects for which the outcome was not favorable, in order to try to establish a functional correlation between the role of the government in such projects and their eventual failure. More useful lessons could then be drawn as regards the dynamics of rural development in northeast Brazil.

2.4        Lastly, as an extension of the previous paragraph, this Secretariat feels that the possibility of an overall evaluation of joint World Bank and Government of Brazil projects in the Northeast be explored in order to get a higher return on the resources invested. Likewise, that evaluation should take into consideration the cost of the projects -- not only economic and financial but also their social and environmental impacts. This would allow for a new approach to the issue of the form of government intervention in regional development programs and the refocusing of those already under way.

Very truly yours,

/s/ Edson Soares Ferreira  
Director  
SDR-PR Planning and Evaluation Department