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A RAND NOTE

AD-A231 535

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Preliminary Observations on Hainan's  
Strategic Development Plan

Charles Wolf, Jr., Donald Putnam Henry,  
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May 1989

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The research described in this report was sponsored by the National Research Center for Science and Technology for Development, People's Republic of China under Contract No. CA88-686.

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**A RAND NOTE**

**N-2913-NRCSTD**

**Preliminary Observations on Hainan's  
Strategic Development Plan**

**Charles Wolf, Jr., Donald Putnam Henry,  
K. C. Yeh**

**May 1989**

**Prepared for  
The National Research Center for Science and  
Technology for Development, People's Republic  
of China**

**RAND**

## PREFACE

On April 22, 1988, The RAND Corporation and the National Research Center for Science and Technology for Development (NRCSTD) of the People's Republic of China concluded an agreement in Santa Monica, California, under which RAND would provide advisory services to the NRCSTD in connection with that Center's study of a strategic development plan for the province of Hainan.

The initial advisory work described in this Note was sponsored by the NRCSTD and conducted in 1988 by RAND's International Economic Studies program. It should be of interest to policy analysts, economists, and decisionmakers concerned with China.

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Availability Codes	
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## SUMMARY

Between June 22 and July 5, 1988, a three-man RAND team visited Hainan and Beijing as the initial step in providing advisory services envisioned in an agreement concluded between The RAND Corporation and the National Research Center for Science and Technology for Development (NRCSTD) of the People's Republic of China. This Note gives preliminary observations that summarize the RAND team's initial work. The ideas described herein were discussed in Hainan and Beijing by the members of the RAND team with officials and staff of the NRCSTD, the Hainan provincial government, and officials of the central government in Beijing. In accord with these discussions, an earlier draft of this document was circulated in Beijing and Hainan to elicit comments and reactions from the NRCSTD and the Hainan government, and to help decide what type of further interaction should take place between the NRCSTD and RAND. The result of this process has been an agreement between the NRCSTD and RAND for follow-on work in several problem areas.

The Note's principal points include the following: Strategic development planning in Hainan should be construed in the sense of planning policies rather than planning projects; the Hainan government should focus on producing "public" goods and providing a suitably compelling market environment; substantial decisionmaking authority and responsibility should be delegated to the Hainan government; diverse sources and uses of financing should be appropriately matched; the military may be able to play a positive role in Hainan's development; and further RAND/NRCSTD activities might include additional advisory services, selected research studies on specified topics, and staff training.

## ACKNOWLEDGMENTS

An earlier draft of this Note was slightly revised on the basis of helpful comments from our RAND colleague, Dr. Benjamin Zycher.

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## I. INTRODUCTION AND BACKGROUND

Forty years ago, Hainan and Taiwan faced similar problems: low per capita income; low educational, skill, and literacy levels of the population; and a predominantly agricultural, closed economy with limited export potential. Today the economic conditions in Hainan remain virtually the same, while Taiwan has become one of the newly industrialized economies (NIEs).

Whatever the reasons for Hainan's different outcome from that of Taiwan, Hainan poses a great challenge as well as an opportunity for the leadership of the People's Republic of China (PRC), particularly in view of China's emphasis on accelerating the economic growth of the coastal region.

In light of this background, on April 13, 1988, Hainan Island was formally established as China's 23rd province and the country's largest Special Economic Zone. The upgrading of Hainan from a district of Guangdong Province to an independent province signified a profound change in the Chinese leadership's assessment of Hainan's strategic, political, and economic importance.

Strategically, Hainan is situated at the southern tip of China, overlooking the sea lanes joining Japan, Korea, Taiwan, and Hong Kong with Southeast Asia. It is located directly across the Tonkin Bay from Vietnam, in a region reportedly rich in oil and natural gas. The recent administrative change underscores the increasing attention of the leadership to Hainan's strategic value.

Politically, a provincial government directly concerned with the social and cultural integration of the island's population would help to resolve the recurring conflicts among Hainan's minorities and the majority of Han Chinese.

However, the leadership's most important declared purpose in establishing Hainan as a province relates to economic policy. As a province, Hainan provides a geographically independent region for China to experiment with various institutional innovations. The outcome of these experiments, if successful, is intended to form the basis for nationwide policies of market-oriented economic development and reform. If unsuccessful, the political and economic costs to the mainland would be minimized.

Moreover, a rapidly developing market-oriented and outward-looking Hainan would have significant implications for China's relations with Taiwan and Hong Kong.

It would demonstrate to them that the slogan of "one country with two systems" is feasible notwithstanding the skepticism that the concept has aroused. It would also demonstrate that the Chinese government is determined to move in directions that are closely compatible with, and may replicate, the market economies of Taiwan and Hong Kong.

In light of the great importance of Hainan to China, the National Research Center for Science and Technology for Development (hereinafter referred to as either the NRCSTD or the Center) was assigned the task of studying the crucial question of how best to develop Hainan: specifically, of formulating what has been referred to as a strategic development plan for the island.

The question is not easy to answer. For decades Hainan served as a raw material supply base for the mainland. Consequently, the island over-specialized in raw material production and remained generally underdeveloped. Furthermore, the legacy of a closed, government-controlled economy created a vast gap between the Hainan government's announced aim of "a small government and large society," and the economic reality of a large government and an infant society.

Thus far, at least two serious studies of Hainan's development strategy have been made: one by the Japanese International Development Center in cooperation with the State Science and Technology Commission (SSTC), and the other by the Chinese Academy of Social Science (CASS). A total of 26 Japanese and 40 Chinese participated in the former study for a period of 27 months during the 1985-1987 period. The project is now near completion. The latter study was undertaken in November and December 1987 by a group of economists and political scientists led by Liu Guoguang, the Vice President of CASS. This study has been completed.

The PRC leadership and the Hainan government decided that a third assessment is needed and entrusted the NRCSTD to organize a new project. The broad assignment includes the general strategic development plan for Hainan as well as several potential subprojects on energy, environmental protection, science and technology development, city planning for Sanya, training of personnel, and export processing zones. The NRCSTD sought The RAND Corporation's cooperation in the Center's study and design of the strategic development plan.

Several reasons prompted NRCSTD's request to RAND: (1) The Japanese study was made before China's leadership decided to make Hainan a separate province, to

develop Hainan as a market-based economy, and to use the experience acquired in Hainan as an aid in charting economic policy for the mainland, as well. These changes made the findings of the Japanese study less relevant. (2) In the judgment of the Chinese leadership, the CASS study, although useful, did not give adequate attention to the development experience of the NIEs; hence a new study drawing on RAND's expertise in this area would be valuable. (3) Cooperation with RAND could help broaden the research experience of the NRCSTD staff and thereby enhance NRCSTD's research capability.

The NRCSTD has organized three committees to oversee the project on Hainan: an *advisory committee* of seven top officials in the central and provincial governments to review the project as a whole; a *leading group* led by Mr. Hu Ping to decide on policy matters; and an *executive group* headed by Mr. Kan Xijun to monitor implementation. The NRCSTD research team participating in the strategy project currently consists of eight researchers, and this number may increase. In addition, eight consultants in Hainan are involved.

On April 22, 1988, the NRCSTD signed an agreement with RAND whereby RAND would provide advisory services to the NRCSTD for the strategic development plan project over the next 12 to 18 months.

From June 22 through July 5, 1988, a three-person RAND team visited Hainan and Beijing. This Note outlines the team's preliminary thoughts on a strategic development plan for Hainan, based on discussions with Hainan's Governor and Deputy Governor, the Social and Economic Development Research Center in Haikou, the municipal government in Sanya, the State Farm Enterprise directors, the president and staff of the South China College and Academy of Tropical Agriculture, as well as discussions with the central government in Beijing, with CASS, with other scholars, and especially extensive and valuable discussions with the NRCSTD staff.<sup>1</sup> We have also perused the CASS reports and parts of the Japanese report on Hainan.

Our preliminary reconnaissance is organized under the Note's first five headings: (1) Strategic Development Planning: Planning of Policies Versus Planning of Projects; (2) Experimentation with Institutional Innovation; (3) Infrastructure and Human Resources Development; (4) External and Internal Policies for Investment Financing; (5) Relationships Between Development and Security in Hainan.

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<sup>1</sup>The appendix to this Note shows the itinerary and meetings of the RAND team.

Thereafter we summarize several issues and topics for possible further RAND advisory services, collaborative research, and training. The concluding section summarizes some of our principal points and is followed by an appendix that shows the itinerary of the RAND team's June 22-July 5 visit.

As we have indicated in discussions with Mr. Hu Ping and members of the NRCSTD staff, the ideas and observations presented in this Note are intended as both an initial report of RAND's advisory services to the NRCSTD and as a vehicle for eliciting comments and reactions from the Center, and thereby starting a process of sustained interaction between the Center and RAND.

## II. STRATEGIC DEVELOPMENT PLANNING: PLANNING OF POLICIES VERSUS PLANNING OF PROJECTS

### PLANNING DEVELOPMENT POLICY CONTRASTED WITH PLANNING PROJECTS AND SECTORS

Economic development planning can take either of two contrasting forms. One form places primary reliance on market forces—on market-based prices, determined by competition among producers in foreign and domestic markets and by consumer choice. In this model, the ensuing rate and pattern of economic growth results from the interplay of these forces, subject to some degree of guidance and influence by government policies.

The second form places primary reliance on growth targets, sectoral priorities, and component projects, determined by government with little attention devoted to the market forces—market-based prices, competition, consumer choice—mentioned above.

This type of “target” planning approaches economic development as essentially a mathematical programming task. Planners establish growth targets for the economy as a whole, covering a specified period—typically five years. These targets are disaggregated into growth requirements for individual sectors—e.g., heavy industry, light industry, agriculture, energy, transport—as well as projects within sectors, based on assumed or derived relationships governing interindustry or intersectoral flows of intermediate products and on final demand. The sectoral goals are, in turn, used to estimate requirements for investment, labor, and other inputs, according to current or anticipated input-output relationships. In general, this form of planning has been characteristic of the development practices of Soviet-type economies, as well as India and most other less-developed countries.

By way of contrast, the first form of planning, which is sometimes referred to as “indicative” or “perspective” planning, focuses on the design and implementation of preferred and practicable policies to allow and assist market forces to operate in furthering economic and social progress. The agenda of this form of planning is not principally concerned with projects. Instead, it is mainly concerned with identifying obstacles and impediments to the effective functioning of markets, and with formulating,

evaluating, and scheduling the best set of policies capable of being implemented to surmount these obstacles. In general, this form of planning has characterized the development practices of the newly industrialized economies (NIEs) in Asia: South Korea, Taiwan, Hong Kong, and Singapore.

We understand that the concept of "strategic development planning" for Hainan is interpreted by NRCSTD and the Hainan provincial government in these latter terms. We strongly endorse this view. This endorsement is based both on the experience of the NIEs alluded to above, and on the evident need, expressed by Deputy Governor Bao and others, to develop in Hainan a legal and institutional framework that will enable market forces to operate effectively in accord with the concept of "a small government in a large society." Following this path will also enhance the experimental value of Hainan's development for future policy formulation on the mainland.

The Japanese report on Hainan's development, now nearing completion after 27 months of work, performed by 26 Japanese experts during the 1985-1987 period, reflects the "target" or programming approach to development planning, whereas significant portions of the 1988 CASS report are closer in spirit to the indicative or perspective planning approach that we endorse.

## **COST-EFFECTIVENESS ANALYSIS AND THE DESIGN OF PREFERRED POLICIES**

Since May 1988, the State Council has promulgated 23 so-called "preferential policies" to encourage foreign investment and foreign trade to "accelerate development and construction" of Hainan, as well as 16 such policies to further internal investment directed toward the same purposes. Notwithstanding these significant indications of the importance ascribed by China's top leadership to the furtherance of Hainan's market-oriented development, it is our understanding that the intervening layers of government and bureaucracy often dilute and diminish the Hainan provincial government's authority to implement these intended policies. For example, while the declaratory policies imply a broad grant of authority to the provincial level to negotiate attractive land-lease arrangements with prospective foreign investors (up to a 70-year, but extendable, maximum), in practice Beijing approval may substantially modify, as well as delay, implementation of these arrangements. Numerous other examples were cited repeatedly in our conversations with the Hainan government, with managers of the State Farm

Enterprises, and with the Sanya municipal government. Implementation of these policies is likely to encounter stiff bureaucratic resistance to the extent that the intended policies transfer decisionmaking from Beijing to some combination of the market and the Hainan authorities.

Because the number of designated preferential policies is so large, it may be worthwhile to undertake systematic cost-effectiveness analyses of these policies to identify which specific ones are most important. This subset of policies could then be brought to the attention of the State Council, or the Leading Group on Economic Reform, to assure that authority to implement them is fully delegated to Hainan in accord with the top leadership's intentions for Hainan's autonomous, market-oriented experiment. The process of conducting such analyses may also stimulate discovery or invention of alternatives, or combinations of measures, that would act as even more powerful incentives to promote the foreign investment, technology transfer, and managerial expertise sought for Hainan.

For example, instead of a preferential policy of duty-free imports into Hainan of certain items ("means of transportation", etc.), it might be preferable to focus duty-free importation on a more limited set of items but, in exchange for this limitation, to allow duty-free access to the mainland of Hainan exports that have added appreciable value to the intermediate imports. Other examples of possible priority policies might include: (1) development of a market for trading equity shares of State Farm Enterprises and sales of participating debentures to workers and managers in State Farm Enterprises, thereby extending ownership and providing an incentive toward higher productivity; (2) delegating authority to Hainan to decontrol prices of both inputs and outputs of State Farm Enterprises and to determine the scheduling of such changes.

It is worth emphasizing that scheduling of policy implementation should be viewed as an essential part of the evaluation of preferential policies. For example, developing a policy to allow or encourage direct exports by State Farm Enterprises would enhance the feasibility and effectiveness of policies designed to establish currency convertibility; hence, changing export policy should probably precede currency convertibility. And establishing a public finance system for Hainan should probably also precede currency convertibility and follow or accompany the freeing of direct exports.

The appropriate methodology for conducting cost-benefit, or cost-effectiveness, analyses of alternative policies is neither simple nor exact. Nevertheless, it should

include several empirical elements. For example, on the "benefits" or "effectiveness" side of the ledger, the analyses should probably include: (a) structured interviews with a selection of experienced and reliable people from the international business and financial community (perhaps in Hong Kong, South Korea, the United States, etc.); and (b) a review of the experience of the Special Economic Zones (SEZs) as well as of Taiwan, Singapore, South Korea, and Hong Kong to ascertain what specific policies were most effective and least effective in stimulating foreign investment in those instances. On the "cost" side of the ledger, the analysis should probably include estimates of short-run and long-run economic costs (for example, possible environmental and health costs and the resource transfers possibly involved in forgone tax revenues), as well as the political or social costs that may be incurred in implementation of particular policies.



### III. EXPERIMENTATION WITH INSTITUTIONAL INNOVATION

One basic purpose of establishing the five SEZs, including Hainan, is to experiment with innovative institutional changes in these zones, and on the basis of these experiments, to design reform policies for the entire Chinese mainland. At present, in all the SEZs, as on the mainland itself, strong and persistent bureaucratic resistance to change often stands in the way of institutional reform. In Hainan, this problem appears particularly compelling for two reasons. First, mainly as a result of prior over-specialization in a few products (e.g., rubber, sugar, iron ore), the state farms and some industrial enterprises that are directly under the control of various ministries in Beijing occupy a much more predominant position in Hainan than in other SEZs. For example, one-sixth of the total population in Hainan live and work in state farms that have direct links to the Ministry of Agriculture. Second, the economic reform movement in Hainan has hardly begun. The bureaucracy thus remains deeply entrenched and powerful.

Under these circumstances, experiments with institutional changes are virtually impossible to implement, because many individual units are directly or indirectly dependent on the central ministries for resources and political support and less dependent on the Hainan government. They are therefore in a position to reject or ignore experimental policies proposed by the provincial government. As a result, the authority of the provincial government is seriously eroded. Moreover, bureaucratic independence often leads to sub-optimization at the enterprise level that may not yield the best results for Hainan as a whole. For example, the choice of location to build port facilities is strongly influenced by the Ministry of Metallurgy, which is primarily concerned with the shipment of iron ore to the mainland. Hainan's interests may be better served by building a port elsewhere that will promote Hainan's exports to external markets.

It is therefore of fundamental importance to understand the political as well as financial motivations that underlie resistance in Beijing against a greater degree of authority and autonomy for the provincial government. In turn, this can help in developing means to reduce, to counter, or to circumvent bureaucratic intervention so that meaningful experimentation can take place in Hainan. One way to achieve this goal is to consolidate all financial resource flows from the various ministries to individual units in Hainan into a single "block grant," to be channeled from the State Council

through the Hainan provincial government. Figure 1 compares the lines of authority and resource flows in the existing structure with those in a hypothetical block-grant framework.

The significance of the block-grant arrangement is twofold: politically it would diminish, if not sever, the Beijing ministries' control over the individual units in Hainan. The latter could no longer be coerced or motivated to counter the provincial government's policies. Consequently, experiments on system restructuring would be less contaminated by bureaucratic intervention and would thereby generate more useful and reliable information for the analysis, evaluation, and design of policies for economic reform. Economically, the new arrangement would increase the financial autonomy of the provincial government, thereby giving Hainan more freedom to experiment with alternative public financial policies, to adopt as well as modify the policy experience of the NICs, and to conduct these policies so as to benefit Hainan as a whole.

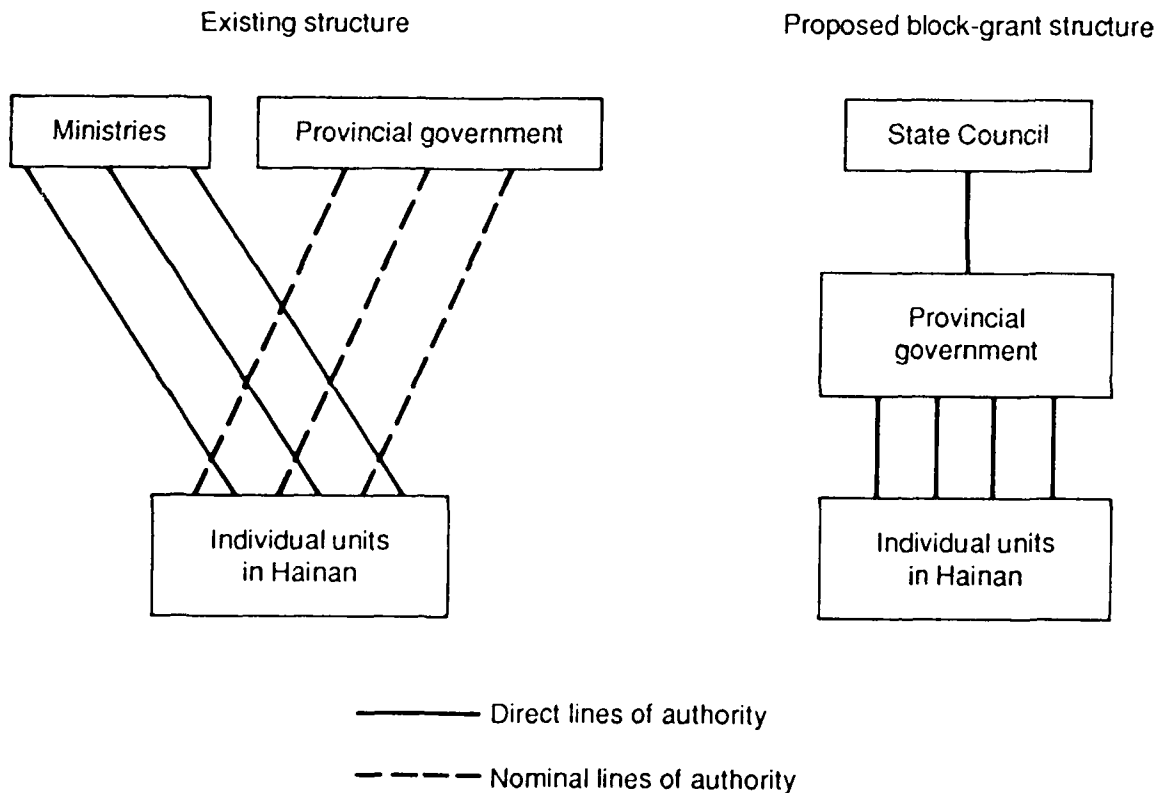


Fig. 1—Comparison of authority and resource flows

Of course, with greater political and financial independence, the Hainan government must also accept greater responsibility. This responsibility is an obligation that accompanies the enhanced authority that the provincial government needs and seeks. Consequently, the provincial leadership must be made accountable to the Center for the major policy decisions and their consequences. This requires that the Governor and Deputy Governor should be responsible for establishing and maintaining a periodic reporting system to account for what is really happening and why.

As a preliminary step toward the use of block grants, it will be useful to find out whether there is a net inflow or outflow of financial resources from the Center to Hainan and the size of the net flow. In the process, the analysis should identify which individual units are contributing to or receiving from particular ministries. For this purpose the matrix of financial flows shown in Fig. 2 illustrates the type of accounting framework that may be useful to establish a baseline estimate for a given period, say 1986 and 1987.

Each column shows the flow of financial resources from a central ministry to various state farms, enterprises, or departments in Hainan. Each row shows the financial resources received by a farm, enterprise, or department in Hainan from various central ministries. (In principle, rows and columns should include implicit transfers—e.g., in the form of subsidies or fixed prices—as well as explicit ones.) Each cell shows the net transfer. A positive sum would indicate a net transfer received by the farm, enterprise, or department, and a negative sum would indicate a net transfer from the farm, department, or enterprise to the ministry. The column totals represent total transfers of each central ministry to Hainan, and the row totals, the total transfers received by each farm,

Units in Hainan	Ministries in Beijing						Total
	A	B	C	D	E	F	
State farm 1							
State farm 2							
State enterprise 1							
Total							

Fig. 2—Matrix of financial flows

department, or enterprise in Hainan. The sum of the column (or row) totals is the amount of financial resources Hainan receives from the Center.

To be sure, the net transfers may be difficult to estimate accurately because of price distortions and subsidies. But even an approximation would be useful to establish an empirical basis that would permit restructuring of the financial flows. It will also be useful, in any attempt to estimate the interregional balance of payments between Hainan and the Chinese mainland, to show the total resource flows between the two regions.

The concept of block grant is only illustrative of the many generic transformations that could be introduced to Hainan as part of the restructuring experiment. Other possibilities include: (1) gradual or rapid decontrol of wages and prices of both inputs (chemical fertilizers, ores, fuel, etc.) and outputs (food, commodities, etc.); (2) employee participation bonds to mobilize domestic savings; (3) measures to attract investments by joint ventures on the Chinese mainland that have accumulated large sums of earnings in the past; (4) institutional changes to accelerate export liberalization and to establish export processing zones; and (5) the step-by-step economic integration of Hainan with Hong Kong.

#### **IV. INFRASTRUCTURES AND HUMAN RESOURCES DEVELOPMENT**

Hainan's current economic position is low, but not significantly more depressed than that of Taiwan or Korea 30 or 40 years ago. Both Taiwan and Korea now are closer in industrial structure and technology levels to the developed world than to the developing world. Hainan may be able to follow in their path. To do so, depends not only on the formulation and implementation of an appropriate policy environment, but also on developing both infrastructure and human resources.

For example, the Hainan government plans to turn the southern city of Sanya into a world class resort. Sanya does have the natural endowments of climate, beaches, and scenic beauty to become such a resort area. But it needs more: an international airport, roads, adequate electric power, telecommunications, a clean water supply, and sewage disposal.

Nor are Hainan's needs limited to fixed investment (and the sometimes expensive operating costs associated with fixed investment). It is also essential to have a better educated and diligent work force. In the early stages of Hainan's development, part of its needed work force may be attracted from the mainland, and certain critical skills may be brought from abroad. Thereafter, Hainan will need an education system that provides the work force with basic literary skills and disciplined work habits: understanding directions; following and remembering instructions; promptness; reliability; etc. Still later, secondary and vocational training tailored to the industries developing in Hainan will be needed. Ultimately, Hainan will need significant numbers of people schooled in business management, technical and engineering skills, foreign languages, and liberal arts.

As part of its overall development strategy, Hainan needs to improve both its "hard" and "soft" environments. Fixed investment represents the hard environment. Education lies between the hard and soft environment because school construction is "hard," while upgrading of skills is "soft." Other aspects of the soft environment will also require further attention: law and order; a legal system compatible with market processes; methods of settling business disputes that are widely perceived as fair; and a currency, banking, and financial system that facilitates business transactions.

In planning Hainan's development, it may be useful to examine the prior experience of infrastructure and human resources development in Korea and Taiwan. Both these economies concentrated in the 1950s and 1960s on publicly financed infrastructure, particularly electric power and roads. Both Taiwan and Korea benefited substantially from U.S. economic aid in their early development years. After this initial infrastructure buildup, U.S. aid decreased sharply, and these economies grew and were financed internally and externally based on their own economic resources, guided by effective government policies and by competition in international and domestic markets, and supplemented by foreign capital inflows. With basic infrastructure in place, Korea and Taiwan moved steadily from low technology industries to heavy industries to higher technology industries. Public infrastructure investment has kept pace with development to assure continued progress.

Hainan cannot depend upon foreign aid as a major source for infrastructure financing. Some support may be forthcoming from the central government, but most indications are that these funds will also be severely limited. On the other hand, international capital markets are much more developed and responsive today than when Korea and Taiwan started their economic ascents in the 1960s and 1970s.

Some aspects of investment financing are discussed in Sec. V below. Apart from funding considerations, Hainan should consider scheduling or phasing its infrastructure and human resources development. Scheduling of infrastructure is driven by considerations similar to those discussed in Sec. II above in connection with the scheduling of policies.

At least three factors should be considered in scheduling infrastructure investment. First, the importance of projects should influence the order in which they are undertaken. A schedule is a tool that implements a prioritization of projects, with high priority projects coming first. Several indicators might be used in prioritizing, such as the net present value of competing projects or their internal rate of return, including allowance for imputed social and macroeconomic benefits. A second consideration in scheduling infrastructure investments is the availability of alternatives. Hainan may eventually need people trained in business, science, and the liberal arts. However, schools to train such people may be scheduled later rather than sooner, because people from the mainland, or overseas Chinese, can be tapped immediately, and Hainan residents can attend schools outside of Hainan until Hainan can support its own higher education system.

Even when alternatives are more expensive than producing the goods or services internally, Hainan may choose to delay certain public infrastructure projects. For example, Sanya may have to decide between an international airport or a potable drinking water system to supply resort hotels. Even if the internal rate of return is higher for the drinking water system, the airport might be scheduled first. This is because there is no good alternative to bringing vacationers to Sanya, but hotels may be able to purify their own water at some expense. Since the supply of funds for "public goods" is severely constrained, displacing costs to the "private" goods markets (e.g., customers at the hotels) may be justified even if such a practice is more expensive than the "public-good" counterpart.

Finally, investment scheduling should be based on the level of development achieved in Hainan. Ports, harbors, electric power, and roads may be the most important investments now, but such things as toxic waste disposal, advanced telecommunications, and technical schools may acquire higher priority later. Put another way, the priority of projects shifts as development proceeds.

Scheduling need not be rigid or entirely based on time. Electric power capacity should be installed in response to projected and realized demand growth, rather than by calendar. These projections are likely to change as development proceeds.

Scheduling and prioritization of infrastructure should be based on factors specific to Hainan, but certain patterns have worked in the newly industrialized countries. In particular, electric power production is often an early priority because manufacturing productivity is low without adequate and dependable electric power. Roads, ports, airports, and water supply projects typically follow. Sewage treatment plants and other such investments follow still later. Improvements in the education system typically proceed steadily throughout development with many of the more advanced and technical education provided, at least initially, by schools abroad. Improvements in health care systems have generally been steady but have started somewhat later than improvements in education.

## V. EXTERNAL AND INTERNAL POLICIES FOR INVESTMENT FINANCING

Hainan will need large amounts of investment in order to reach income levels prevalent in the newly industrialized countries. The CASS report on Hainan estimated the total investment requirements at over \$50 billion between now and 2005.<sup>1</sup> The resources available to Hainan to achieve these goals may be severely limited. Consequently, it is important that investment resources be used efficiently.

Both the sources and the uses of investment funds are heterogeneous. Investment funds may come from sources that have very different servicing obligations: for example, government revenues, foreign aid, domestic borrowing, international borrowing, equity investment from domestic sources, and foreign direct investment. Funds may be utilized for a variety of purposes varying from public roads to working capital of high technology foreign manufacturing enterprises. These uses differ substantially in the extent to which they directly generate revenue to meet servicing obligations. Analysis and careful thought should be devoted to determining the various sources of funding that are appropriate to the various types of investment.

To make this allocation problem more concrete, consider a set of projects that differ according to two characteristics: (1) the need for foreign expertise and assistance; and (2) the degree to which the project can generate its own financing. Projects can be placed in a matrix according to these characteristics with columns representing the need for foreign expertise (e.g., no foreign expertise required, foreign expertise required in constructing and starting the project, or foreign expertise required both in construction of the project and in ongoing management) and rows representing the degree to which the project is self-financing (e.g., no funds generated, partially self-financing, and fully self-financing). The schematic shown in Fig. 3 below illustrates the point.

The various sources of funds should be allocated over projects in the matrix so that the characteristics of the funding complement the needs of the project. For example, construction of secondary roads requires little or no foreign expertise and does not directly finance itself. Yet the benefits of such roads may be large, as well as widely dispersed, because general economic activity in the area may increase greatly as a result.

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<sup>1</sup>At an official exchange rate of 3.6 yuan to the dollar.



Degree of Self-Financing	Project Type		
	No Foreign Expertise	Construction Expertise	Construction and Mgmt Expertise
No funds generated			
Partial self-financing			
Full self-financing			

Fig. 3—Project types and funding sources

But there is no direct mechanism for the builders of such a road to capture these dispersed benefits. Such a project should appropriately be financed through government revenue. Even if money were to be borrowed to finance it, the project would ultimately have to be repaid from government revenues because only the government is likely to be in a position to capture some of the collective benefits of the road.<sup>2</sup>

At the other extreme, some investment projects require foreign expertise both in construction and in ongoing management, yet the benefits of these projects are largely confined to a distinct group of customers or users. For example, a world-class resort hotel in Sanya would need, at least in the near future, foreign expertise in management, as well as in design and construction. Yet such a project should be self-financing: Hotel guests pay for rooms and services, which in turn provide a return on the hotel investment. Such projects should probably be financed, in large part, by direct foreign investment to the extent that foreign investors may calculate that their risks are likely to be decreased by the presence of foreign management and construction.

The cells of the matrix in Fig. 3 would show the appropriate type of financing for the project characteristics defined by the rows and columns. In general, cells located in the upper left-hand part of the matrix would be most suitable for public domestic financing, while cells in the lower right-hand part of the matrix may be most suitable for private foreign investment.

<sup>2</sup>In some cases, of course, road tolls may be used to provide user-based revenue, although this mechanism may entail some efficiency losses.

This framework should not be applied too rigidly. Most projects should be financed through a combination of sources. Projects also differ in dimensions other than their required foreign involvement and self-financing characteristic: the degree to which a project generates foreign exchange rather than domestic currency; the payback period of the investment; the degree to which the project's success depends on management skills as opposed to government policy;<sup>3</sup> etc. Comparative availability will also shift the appropriate range of financing sources.

Within the overall development strategy outlined in this Note, market forces rather than government policy should determine the types, scale, and financial arrangements for self-financing projects. The government's role should be confined to the production of "public" goods and services. Foreign aid and grants from the central government in Beijing should, of course, be directed toward these projects. Beyond these amounts, which are bound to be small compared with aggregate needs, locally controlled public funds should be used. When borrowing is necessary for public investment, domestic sources should be tapped first, because a province can more credibly pay back loans in national currency than in foreign currency and should consequently be able to obtain more favorable interest rates.

Finally, the provincial government might consider foreign borrowing (perhaps backed by lease-concession collateral) to finance "public good" infrastructure projects. The interest premium Hainan would have to pay on world markets is likely to be high. This rate might be significantly lowered by two means: (1) by measures that would make Hainan's currency convertible; and (2) by developing an adequate public finance system for Hainan. Both of these measures would be closely compatible with development of a market-oriented economy. These steps would also increase the flow of foreign and domestic investment funds into Hainan for the production of "private" goods, as well. Hainan may be able to find desirable ways to bundle infrastructure and land concessions and thus tap foreign and domestic equity capital: land concessions near the airport in return for investment in the construction of Sanya's airport; a desirable hotel site in return for building a road to the hotel that also serves other users, etc.

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<sup>3</sup>For example, an electric utility's financial viability may depend as much on decisions of government regulators as on good management.

## VI. RELATIONSHIPS BETWEEN DEVELOPMENT AND SECURITY IN HAINAN

In the course of several discussions between the RAND team and various Chinese representatives, questions were raised concerning the risks and uncertainties that might impede Hainan's development as a result of the island's vulnerable location in close proximity to the Nansha Islands, the adjacent oil and gas deposits in the South China Sea, and the regional disputes associated with them. Several hypothetical scenarios were alluded to as illustrative of the risks that might ensue. The point was made that the security issue might be of particular concern for Sanya because of the expressed intention to develop it as a tourist center and because of its exposed location at the southern tip of Hainan.

On the basis of only limited discussion and reflection, we doubt that these circumstances should be viewed as a serious uncertainty or obstacle in the planning and implementation of Hainan's development. This preliminary conclusion is based on several considerations.

First, previous development experience in other countries suggests that the existence of much more severe security threats than the one that conceivably faces Hainan have not been a significant impediment to rapid, successful development. In South Korea and Taiwan, the combination of effective public policies and efficient infrastructure investment was able to initiate and sustain impressive development processes, notwithstanding the evident existence of security threats in both places. Moreover, it is doubtful whether growth would have been even more substantial in the absence of these threats.

Second, China's own appreciable military capabilities are very likely to provide an effective deterrent to security threats that might affect Hainan. Moreover, it seems probable that China's conventional deterrent is likely to increase in the forthcoming years, relative to the sorts of threats that might arise in this region.

Third, the countries with concerns in the Nansha region—Vietnam, Indonesia, and the Philippines, besides China itself—share a mutual interest in facilitating the exploration of the area to determine whether—and at what level of fuel prices in the world market—the area's oil and gas deposits would be commercially exploitable.

Furthermore, the countries concerned have a strong mutual interest in obtaining outside capital and technology for this purpose, since none of them is in a position to undertake the effort alone. Consequently, it would seem that discussions and negotiations, dealing with both the burdens and possible benefits associated with this effort, would be warranted if the shared common interests are to be advanced.

Finally, it is worth mentioning that the PRC military may be able to play a valuable positive role in furthering Hainan's development, rather than simply acting to assure security in the area. As discussed in Sec. IV above, construction of infrastructure and upgrading of human resources are essential ingredients for Hainan's development. Some road and harbor construction, using military labor and military engineering units, may be feasible and efficient in Hainan. Furthermore, the military may be in a position to assist in upgrading some of Hainan's indigenous population—not excluding the island's minorities. This assistance, imparted with proper restraint and respect for individual rights, might take the form of basic literacy training, as well as training and experience with disciplined, regularized working habits that can be transmitted through military service.

It is worth recalling that South Korea's development—especially in the 1960s—was given a powerful boost by these types of complementary relationships between efforts by the military and development of the civil economy. This experience may warrant study and emulation in Hainan.

## **VII. POSSIBLE FOLLOW-ON RAND RESEARCH AND TRAINING ACTIVITIES**

In accord with the April 1988 agreement between NRCSTD and RAND, and subject to the expected availability of additional funding, Mr. Hu Ping has requested that RAND indicate several possible areas of further research and training activities that it might pursue in conjunction and collaboration with the NRCSTD study of Hainan. This section is a response to that request.

The suggestions that are made, which have already been informally discussed with NRCSTD in Beijing, are intended to be illustrative rather than exhaustive. They are intended to provide a basis for discussion, refinement, and possible choice, since RAND would not be in a position to pursue all of these activities in any case. Some of the research topics mentioned under (2) below, might be supplemented or supplanted by others, and any of them might be pursued either by RAND, by NRCSTD, or collaboratively by them both.

### **(1) FURTHER ADVISORY SERVICES**

As implied in the April 1988 agreement, RAND intends to provide further advisory services in connection with the Hainan study. These services will probably be developed along the lines of the June 22-July 5, 1988, RAND visit, perhaps with the addition of one or two members to the RAND team. The agenda and timing of subsequent team visits would be developed to accord with the progress and needs of the strategic development planning study of Hainan.

### **(2) RESEARCH TOPICS FOR POSSIBLE FURTHER STUDY**

#### **(a) Developing a Public Finance System**

If Hainan is to develop into a successful, market-oriented economy, changing and improving its current public finance system will be necessary. Even with the expressed goal of a "small government and a large society," public finance issues are important because Hainan must largely finance "public" infrastructure from public funds.

The current system presents two fundamental problems: it is designed for a centrally planned, nonmarket economy; and it collects revenues in an inconvertible currency. The first problem will affect the overall ability of the Hainan government to provide infrastructure and services; the second problem creates difficulties in servicing public borrowing from foreign sources.

The first problem requires a major overhaul of provincial finances, while the second would be solved almost automatically if the Foreign Exchange Certificate (FEC) became the major currency in Hainan.<sup>1</sup>

The second problem may be more difficult to solve if Hainan's currency does not move toward convertibility. It was difficult, during our two-week visit, to assess the exact sources of Hainan's current revenues, but significant amounts derive from required sales of products to the central government at below market prices and from the profits of state enterprises. Neither of these sources is appropriate for a market-based economy: Regulated prices interfere with the efficient operation of markets; and state-owned enterprises, which have been protected by guaranteed sales to the State, are seldom able to survive exposure to genuine competition, especially international competition.

Further research and thought are needed to devise a new public finance system for Hainan suited to the province's intended move toward a market-based economy. Such a system could include tax instruments frequently found in market economies: income taxes, sales taxes, value-added taxes, etc. It could rely, to a greater extent than many market economies, on road tolls, airport departure taxes, and other user fees. It could also take advantage of specific features of Hainan's current economic system. Deliveries of products at below market (resale) prices could be converted to land rents for farmers.

Some state enterprises could be privatized (perhaps using proceeds from land rents, rather than profit remittances, for the state farms) through sales to domestic or foreign investors or through gradual employer ownership plans. The province could generate some revenues from either type of sale. Furthermore, Hainan's right to grant transferable land-lease concessions to foreign enterprises for periods up to 70 years may be a valuable revenue-generating tool. Finally, because price stability is an important condition for attracting foreign investment, it may be necessary for the Bank of China (BOC) or the People's Bank to function as an independent Central Bank for Hainan, to

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<sup>1</sup>Or if Hainan uses any convertible currency. See "Currency, Foreign Exchange, and Trade" below.

monitor and control the money supply in the province and to help coordinate monetary and fiscal policies with the basic objective of maintaining price stability.

**(b) Currency, Foreign Exchange, and Trade**

In designing currency, foreign exchange, and trade policies for Hainan, several goals should be kept in mind. First, Hainan's interactions with and integration into the international economy should be maximized. Second, Hainan should maintain trade flows with the mainland. Finally—and this is as much a constraint of policy as a goal—Hainan policies should not greatly undermine the economy on the mainland by exploiting (1) the mainland's continued price and currency controls or (2) Hainan's special position between the external and internal economies.

One suggestion made by the RAND team was free circulation of the FEC in Hainan. This certificate would be freely convertible and pegged to the Hong Kong dollar. The Ren Min Bi (RMB) would continue to circulate alongside the FEC with the FEC-RMB exchange rate determined by the market. The Bank of China would issue new FEC when presented with foreign exchange earned through exports or provided by investors. The BOC would take back FEC when providing foreign currency for imports, repatriation of investment earnings or, conceivably and eventually, investment abroad by Hainan's enterprises.

The intention is that trade with the international economy would be comparatively free (low tariffs, no quotas, no import or export permits) and somewhat controlled with the mainland mostly through tariffs. These tariffs might depend on (1) continued price distortions on the mainland or (2) the value added in Hainan of exports to the mainland.

Many of the details and implications of such a policy need to be sorted out. For example, if the RMB is freely convertible to the FEC, and the FEC is freely convertible to foreign currency, the RMB becomes, in effect, convertible (probably at a rate significantly devalued from its official level). Whether the effects of such a change would be confined to Hainan alone, to Hainan and the other SEZs, or to all of China, is an important question. Also, the financial and trade policies between Hainan and the mainland need further study.

### **(c) Block Grants**

Hainan's economic and financial arrangements with the central government are complex, intertwined, and obscure. Historically, revenues have flowed up from Hainan to Beijing and then flowed back down from Beijing through the ministries to Hainan. Further resource transfers between Hainan and the mainland result from trade flows at controlled prices. Even though the central government has established Hainan as a new province, and even though China's top leadership wishes to enhance Hainan's autonomy in economic matters, the ministries in Beijing are still able to influence Hainan's government through the financial flows they provide to Hainan.

One possible solution to this problem was briefly referred to in Sec. III above. As noted there, the central government could make a block grant to Hainan, thereby bypassing the ministries. Determining the desired size and scope of the block grant is an important policy problem as well as an important empirical problem.

As a starting point, the RAND team recommended that a survey be conducted of the current flows to Hainan. Such a survey might fill in a matrix such as that illustrated in Fig. 2 above. As described earlier, the rows represent entities in Hainan; the columns represent entities in the central government, and the entries are the financial flows from one to the other. The sum of the entries represents flows from the central government to Hainan. This empirical accounting would provide a baseline against which to judge possible block grant proposals. In some cases, the central government may wish to retain links between ministries and the entities in Hainan. In this case, these rows or columns could be excluded from the sum.

This method could be extended further to estimate the value of resources transferred at controlled prices between Hainan and the mainland. As Hainan moves toward a market economy and away from controlled prices, the net resource transfer from this source will disappear. Some adjustment in remittances to Beijing or payments to Hainan may be appropriate to compensate for this "windfall" for one of the parties. Further investigation is necessary to determine the direction, as well as the size of this current net flow, and to provide a basis for policy decision on the appropriate flow.

### **(d) Urban Development Plan for Sanya**

The central importance of Sanya in the overall strategic development plan for Hainan has been mentioned before. To develop Sanya as a world-class resort city, as its natural endowments certainly qualify it to become, potential pitfalls need to be considered and avoided.



First, an appreciation of the character and quality of competing facilities and amenities (in Bali, Hawaii, etc.) would help in assessing the qualities that Sanya should seek.

Second, Sanya's development requires consistency between the creation of consumer-oriented facilities and services, on the one hand, and the supporting infrastructure (electric power, water supply, airport capacity, etc.) on the other.

Third, attention needs to be devoted to appropriate zoning regulations for the city so that, for example, harbor and power generation facilities do not impair either the physical or aesthetic appeal of the environment.

Fourth, the city's development plan requires attention to the consistency between the emerging structure of costs—operating as well as investment costs—and the creation of appropriate sources of revenue to meet them.

#### **(e) Development and Policy Experience in Taiwan and South Korea**

In many respects Taiwan and Hainan in the late 1940s were quite similar, in physical size, in their relatively low level of economic development, and in their roles as raw material supply bases for their respective parent economies. Yet four decades thereafter, Taiwan's economic achievements far exceed those in Hainan.

What development experience and policy lessons can be drawn from Taiwan's record that will be useful in designing a development strategy for Hainan? In particular, how significant was foreign capital in Taiwan's economic growth? In what fields and at what pace did public infrastructure investment pave the way for growth? How did Taiwan transform itself from a predominantly agricultural economy to a semi-industrialized society? How did Taiwan manage to expand its exports by 600-fold in three decades? What institutional changes contributed to or impeded economic growth? What role did the government play?

An in-depth study of those key issues can help to provide insights useful for Hainan's development planning.

Similar questions arise in connection with South Korea's dramatic development experience and the lessons for Hainan that may be inferred from this experience. Certain additional questions also arise in the Korean case. For example, in what ways and with what success did Korea manage to protect "infant" export industries for a limited period of time and then to remove this protection to assure that those industries would be internationally competitive? Were the policies effective that the Korean government

used to assure a reasonable parity between rural and urban levels of living, and do they suggest lessons for social welfare and redistributive policies that may be applicable in Hainan?

In general, the Asian NIEs, especially Taiwan and South Korea but also including Hong Kong and Singapore, provide a dramatic record of successful development in the past two or three decades. Some of this record may provide useful lessons and insights for the strategic development planning of Hainan, notwithstanding the island's special circumstances.

**(f) How "Special" Is Hainan?**

One key question raised by the RAND team related to how "special" Hainan really is compared with the other four SEZs? This question is closely related to another important question: Namely, why should an investor, especially a foreign investor, choose Hainan as the prospective location for an investment rather than one of the other SEZs, or for that matter, rather than Hong Kong, Taiwan, or South Korea?

The answers that we received to this question, both in our discussions in Hainan and Beijing, were somewhat fragmentary. For example, Hainan differs from the other SEZs in that it is the only SEZ that is a province. Hence, it is directly responsible to the State Council rather than to individual cabinet ministries. Also, this status enables the Hainan government to make laws and issue regulations that derive from its provincial prerogatives and that are more extensive than the corresponding authority of the other SEZs. (Exactly how far this legislative authority extends is not entirely clear.)

Another difference apparently relates to the capability that resides with the provincial government to make land-lease arrangements for a maximum period of 70 years, rather than 50 years, which is the limit that evidently applies in the other SEZs.

In any event, it may be worthwhile to do a detailed comparison of the "special" characteristics, authority, and responsibility of Hainan relative to those of the other SEZs, and in particular to determine the extent to which the 23 "preferential policies" relating to foreign investment and the 16 relating to domestic investment, in fact, constitute distinctly advantageous considerations for Hainan.

### **(3) POSSIBLE TRAINING ACTIVITIES**

Our discussions in Hainan and Beijing identified several types of potential training activities that RAND might pursue, ranging from joint workshops in Beijing, Hainan, and Santa Monica, to collaborative research efforts with a training component, to formal graduate training in the RAND Graduate School (RGS). Among the options we have discussed are the following:

(a) NRCSTD may wish to conduct several strategic planning workshops in Hainan, Beijing, and perhaps in Santa Monica. The workshops in Hainan and Beijing might have a prominent training component, while the one in Santa Monica might be a symposium on the strategic planning of Hainan and its results and implications for foreign investment. RAND's collaboration could be an active element in any or all of these workshops.

(b) Training might be provided by RAND for NRCSTD staff in several different ways. For example, Center staff might come to Santa Monica for a 3- or 4-month period to work on some aspect of the ongoing Hainan study, under supervision by RAND staff. Center staff might also audit one or two appropriate courses in the RAND Graduate School. Another type of training might take the form of one or another member of the RAND Graduate School faculty presenting short courses (for example, in analytic methods or microeconomic analysis) for the NRCSTD staff in Beijing. A third, longer-run type of training could be provided for qualified Center staff members who might apply and be admitted as regular graduate students in RGS.

(c) The possibility was also discussed that RAND might assist in the development of curricula and in provision of occasional lecturers for the emerging Administrative and Management Training School in Haikou. This possibility is one that should probably be considered separately from the ongoing Hainan study.

## VIII. CONCLUSION

As noted earlier, this document is intended as a vehicle for eliciting reactions from NRCSTD and from others in Beijing and Hainan who are concerned with Hainan's development.

Our principal points include the following:

1. "Strategic development planning" in Hainan should be construed in the sense of "indicative" or "perspective" planning: that is, placing principal reliance on market forces and on the planning and scheduling of policies (wage policies, pricing policies, export policies, taxation policies, investment policies, and human resources policies) to enable market forces to operate effectively. This is the type of planning that has characterized the development experience of the NIEs.
2. The direct role of government in Hainan should be focused on the production of "public" goods through infrastructure investment and on providing the "soft" environment—including the legal framework and the policy environment—in which market forces can operate vigorously and effectively. The scheduling of infrastructure and of the policy environment is no less important than their content.
3. If the Chinese leadership's aim of experimentation in Hainan is to be realized, bureaucratic resistance in Beijing must be circumvented. One way of achieving this goal is to consolidate all financial resource flows to and from the various central government ministries into a single "block grant" to the provincial government in Hainan.
4. Other institutional innovations that are suggested include gradual or rapid decontrol of prices and wages, export liberalization, and the possible economic integration of Hainan with Hong Kong.
5. Development planning requires an appropriate matching of the diverse *sources and uses of financing*. The various *sources*—government revenues, domestic and international borrowing, foreign aid, domestic and foreign investment—differ in the servicing obligations associated with each of them.

The various *uses*—production of “public” goods, infrastructure, “quasi-public” goods, and private goods—differ in the extent to which they generate capturable revenues.

6. The security issues that relate to Hainan’s development are viewed by the RAND team as manageable. Indeed, it may be possible for the military to play a valuable positive role in furthering Hainan’s development, along the lines of the military’s role in both South Korea’s and Taiwan’s early development experience.
7. Further activities that RAND might pursue in conjunction with NRCSTD include the following: additional advisory services directed toward completion of the strategic development plan for Hainan; and selected research studies of the public finance system, currency and trade, block grants, urban development planning of Sanya, the development experience of South Korea and Taiwan, and evaluation of the degree to which Hainan’s circumstances and preferences differ from those of the other SEZs.
8. Alternative staff training activities that RAND might engage in range from possible joint workshops in Beijing, Hainan, and Santa Monica, to collaborative research efforts with a training component, to formal graduate training in the RAND Graduate School.

## Appendix

### ITINERARY OF RAND TEAM'S VISIT TO HAINAN AND BEIJING, JUNE 22—JULY 5, 1988

#### **JUNE 22, 1988, WEDNESDAY**

Arrived Haikou, Hainan. Meeting with Wei Saying and Li Sinan of NRCSTD about schedule in Hainan. Lin Hong Song (S&T Department of Hainan Province) discussed Japanese study.

Dinner hosted by Governor Liang Xiang and Deputy Governor Bao Keming. Guests included Liao Xun (Deputy Director of the Social and Economic Development Research Center of the Hainan Government), Xie Zhonghui (Director of the S&T Department, Hainan Province), and Mao Liben.

Post-dinner meeting with Deputy Governor Bao and associates.

#### **JUNE 23, 1988, THURSDAY**

Morning session with Zhang Si Ping (Associate Researcher, Social and Economic Development Research Center) and seven or eight associates on 12 issues posed by the RAND team.

Afternoon session with Zhou Qiren and his associates on NRCSTD study group, dealing with their observations on development strategy for Hainan.

#### **JUNE 24, 1988, FRIDAY**

Continued presentation by Zhou in the morning session, after briefly attending the ceremony for formal establishment of the Social and Economic Development Research Center.

Afternoon session with the NRCSTD group to discuss initial comments by RAND team on Zhou's presentation.

**JUNE 25, 1988, SATURDAY**

Began tour of Hainan. First stop: South China Academy of Tropical Agriculture and South China College of Tropical Agriculture. Huang Zongdao, president of both institutions, gave brief presentation, hosted lunch, and conducted tour of research center.

Second stop: August 1 State Farm Enterprise. Chen Yungmen, deputy director, discussed problems of state farm management in Hainan. Continued discussion with State Farm Enterprise Deputy Director Li, who hosted subsequent dinner.

**JUNE 26, 1988, SUNDAY**

Stopped at Tongchi, formerly political center for minorities, en route to Sanya. Arrived Sanya in late afternoon. Jiang Shang Zhou, Deputy Mayor of Sanya, conducted tour of beaches around Sanya and hosted dinner for RAND team with continued discussion.

**JUNE 27, 1988, MONDAY**

Morning session with Cheng Hao, Mayor of Sanya, and Deputy Mayor Jiang on problems of developing Sanya into an international tourist attraction.

Long drive back to Haikou.

**JUNE 28, 1988, TUESDAY**

Morning session among RAND team members to discuss planned Note on Hainan visit.

Afternoon session with Li Fu, President of Cadre College, on the training of personnel for the civil service system.

Evening session with Deputy Governor Bao, Dr. Liu, and associates to exchange views on Hainan's future market-oriented development.

**JUNE 29, 1988, WEDNESDAY**

Direct flight to Beijing interrupted by unscheduled stop at Kuangchou.

**JUNE 30, 1988, THURSDAY**

Morning session with Hu Ping, director of the NRCSTD, and associates to discuss the RAND team's preliminary impressions.

Afternoon session with Zhou and study group associates to discuss issues raised by his group.

**JULY 1, 1988, FRIDAY**

Separate meetings with Hu Quangbao (Deputy Director, Office of Special Economic Zones, State Council) and his associates; Liu Hong Ru (Vice Chairman, State Commission for Economic Restructuring and Vice Governor of Bank of China) and his associates; and Ambassador Lord and commercial attaches David Reuther and Timothy Stratford of the U.S. Embassy.

Dinner hosted by Jiang Min Kuan (Vice Chairman of the State Science and Technology Commission). Guests included: Hu Ping, Li Ming (Deputy Division Chief, Ministry of Foreign Economic Relations and Trade), and Zhang Hu-shan (Chief of Division Policy Bureau, National Natural Science Foundation of China).

**JULY 2, 1988, SATURDAY**

Seminar at NRCSTD on development experience of NIEs (Dr. Charles Wolf, Jr.), role of government in Taiwan's development (Dr. K. C. Yeh), and use of models in development planning (Dr. Donald P. Henry).

Afternoon session with Wang Xuanhui (Assistant Director, General Taxation Bureau, Ministry of Finance).

Late afternoon discussion between Dr. Wolf and Ms. Wei and Mr. Li, members of the NRCSTD staff, concerning planned July 4 concluding discussion with Hu Ping.

**JULY 3, 1988, SUNDAY**

Lunch hosted by Hu Quoding (Vice Chairman, National Natural Science Foundation of China).



**JULY 4, 1988, MONDAY**

Morning session with Hu Ping and associates receiving NRCSTD's reaction to the RAND team's preliminary findings, planned RAND Note, and tentative plans for future cooperation.

Lunch hosted by Director and five Senior Fellows of the Institute of Industrial Economics, CASS.

Afternoon session with Li Jingwen (Director, Institute of Quanti-economics and Techno-economics, CASS) and his associates on CASS study of development strategy for Hainan.

**JULY 5, 1988, TUESDAY**

RAND team left for the United States.