

# TDRI

Quarterly  
Review

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The Thailand Development Research Institute Foundation was established in 1984 to conduct policy research and disseminate results to the public and private sectors. TDRI was conceived, created and registered as a non-profit, non-governmental foundation, and is recognized as such by the Royal Thai Government. The Institute does technical and policy analysis to support the formulation of policies with long-term implications for sustaining social and economic development. There are seven research programs and one unit that carries out special research projects. The areas of research at TDRI are: Agriculture and Rural Development; Industry, Trade and International Economic Relations; Macroeconomic Policy; Natural Resources and Environment; Human Resources and Social Development; Energy, Infrastructure and Urban Development; Science and Technology Development; Management of Economic and Social Development; Women in Development; and Rural Industries and Employment.

**Photo on front cover:** *Nighttime view of a high-rise hotel along the banks of the Chao Phraya. Photograph by Khun Noppadol Ganbua.*

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## Summary of Proceedings

## THE 1989 TDRI YEAR-END CONFERENCE

## “Thailand in the International Economic Community”

In recognition of the recent economic boom being experienced by Thailand, as well as public- and private-sector concerns about the significant challenges this rapid economic growth poses to the country's future development, TDRI's Sixth Year-End Conference focused on economic issues. Particular emphasis was placed on Thailand's future role in the international economic community in a changing climate of world economic policies.

More than 550 participants attended this year's conference, which was held at the Ambassador City, Jom-

tien, Chonburi on December 16-17. Through the services of IBM, (Thailand) Co. Ltd., conference participants were provided with wide-screen visuals as an aid in following conference seminars and presentations. Simultaneous translation was provided as well. The aims of this year's conference were:

- To disseminate information about near- and medium-term Thai economic prospects as they relate to changing economic policies and the world economy.
- To provide a forum for discussing how various economic sectors maintain a competitive edge in trade and how to attract foreign investment.
- To set guidelines on how to manage the external sector in response to changing world trading systems.

Following is a summary of the proceedings at the conference.

### INTRODUCTORY REMARKS

The conference began with an opening address by Dr. Snoh Unakul, Chairman of the Council and the Board of TDRI. In lieu of the traditional president's speech, Dr. Phaichitr Uathavikul, President of TDRI, introduced the slide/video, "TDRI: Five Years Later," which highlights the Institute's history, objectives, accomplishments and plans for the future.

### TDRI'S ECONOMIC FORECAST, 1990 - 1994

**Chairperson:** *Dr. Phaichitr Uathavikul*  
President, TDRI

**Presenter:** *Dr. Virabongsa Ramangkura*  
Director  
Macroeconomic Policy Program  
TDRI

Dr. Virabongsa presented TDRI's forecast about the outlook for the Thai macroeconomy in the next decade. TDRI researchers concluded from their find-



Dr. Snoh Unakul, Chairman of the Board of Directors and the Council of Trustees, TDRI, presents his opening address at the TDRI Year-End Conference.



Participants at the 1989 TDRI Year-End Conference, "Thailand in the International Economic Community," listen intently to TDRI's Economic Forecast, 1990-1994, which was presented by Dr. Virabongsa Ramangkura, Program Director of TDRI's Macroeconomic Policy Program.

ings that Thailand is presently being transformed into a country experiencing rapid industrialization and an increasingly unstable external environment. The Thai economy's impressive growth during the late 1980s will continue through the early 1990s, albeit at lower rates than in 1988. Although the outlook for the world economy is not optimistic due to a disruption of world trade by a climate of increasing trade protectionism and retaliation, the resulting adverse effects on Thailand's economic performance will be only moderate. While deficits in trade and current accounts will be large, they will be slowing down in the near future. During the early 1990s, huge capital inflows will continue, resulting in a large surplus in the balance of payments and international reserves. In addition, the relatively high inflation experienced in 1989 will continue in 1990 but will decrease in 1991 and 1992.

#### **INTERNATIONAL PANEL DISCUSSION ON PROSPECTS FOR THE FUTURE OF THE THAI ECONOMY**

**Chairperson:** *Dr. Snoh Unakul*  
Chairman of the Board and Council  
TDRI

**Participants:** *Professor Staffan Linder*  
President  
Stockholm School of Economics  
Sweden  
*Professor Seiji Naya*  
Vice President, East-West Center  
University of Hawaii, U.S.A.  
*Dr. Sylvia Ostry*  
Special Adviser to the Secretary of  
State for External Affairs, Canada

Following the TDRI forecast, foreign experts provided their views through a panel discussion on future economic conditions in the world and in Thailand.

The panelists agreed that there would be increasing uncertainty about the world trading system. The trade policies of major Thai trading partners such as the United States will deviate from the free trade system to a multitrack policy that will combine multilateralism, bilateralism, and unilateralism. These countries have defended their actions by claiming that retaliation was necessary for maintaining fair competitiveness in a climate where various forms of trade barriers existed in countries that were trading partners. For example, the European Community (EC) countries will soon combine into a single market, which will result in increasing trade barriers against nonmember countries. However, Professor Linder viewed that the EC single market's impact might be less harmful than expected because trade negotiations with EC countries would be conducted through a single, integrated group of countries rather than by separate negotiations with different countries. Additionally, the EC integration into a single market might create a trade expansion effect with a magnitude that is greater than the trade diversion effect. As a result, not only would trading procedures with EC countries possibly be simplified, but there might also be net welfare gains from the EC unification. Nevertheless, the panelists agreed that the trading system for all countries will increasingly evolve into managed trade. Therefore, all developing countries should seek to have industrialized countries adhere to multilateral trade negotiations so that they will trade in a way that follows the GATT rules.

Regarding Thailand's future growth prospects, Professor Naya expressed the view that Thailand will not become a NIC in the same form as Korea or Taiwan because it is richer in natural resources and because its per capita income is still far too low to be able to approach that of the current NICs. However, Thailand does show a very strong growth potential, and all indications are that the Thai economy will be able to grow at a very high rate in the future. Additionally, Thailand has



More than 550 participants attended this year's conference at the Ambassador City, Jomtien. Wide-screen visuals were provided through the services of IBM (Thailand).

the advantage of an existing, hard-working, highly motivated labor force. Moreover, because the Thai bureaucracy is still relatively small compared with other LDCs, appropriate public policy has been consistently implemented despite frequent changes of government over the last decade. However, there are hindrances to the Thai economy's future growth that need to be addressed:

- Thai economic policy formulation and implementation might encounter political problems that will erode the independence and efficiency of the bureaucratic system.
- Thailand's shortage of technologically trained workers will become more acute as the production process shifts from a labor-intensive system to one that employs more capital- and technology-intensive methods.
- Finally, there might be supply-side adjustment problems. Some government trade and industrialization incentive policies can create domestic price distortions and are discriminatory toward certain industries. These distortions must be corrected, more liberal policies adapted, and a uniform standard applied across all industries.

### THE DYNAMICS OF THAILAND'S EXTERNAL ECONOMY

- Chairperson:** *Dr. Phisit Pakkasem*  
Secretary-General, NESDB
- Presenters:** *Dr. Ammar Siamwalla*  
Program Director, Agriculture and Rural Development Program, TDRI  
*Dr. Somchai Phakaphasivivat*  
Former Adviser  
The Securities Exchange of Thailand

- Discussants:** *M.R. Pridiyathorn Devakula*  
Director and Executive Vice President  
Thai Farmers' Bank  
*Dr. Chaiyawat Wibulswasdi*  
Director, Department of  
Bank Supervision and Examination  
The Bank of Thailand

This session specifically addressed how rising interest rates, the 1979 oil price hike, and the drop in prices of agricultural commodities all adversely affected Thailand's economy in the early 1980s. These factors had a very strong impact on foreign trade deficits, the repayment of foreign debts, and domestic inflation. Initially, government policy in 1981 involved devaluation of the baht and controlling existing credit systems. Later, a more flexible system of foreign exchange and currency conversion was initiated. These policy measures strongly aided the expansion of the Thai economy, and all economic sectors—namely, agriculture, industry, and services—grew at balanced rates.

In 1985 global economic conditions—such as lower interest rates, reduced oil prices, exchange rate realignment, and DC recovery—favorably affected the Thai economy. This resulted in the Thai economy's rapid expansion and structural change in the late 1980s. Both the industrial and the service sectors grew rapidly, and external debts were sizably reduced.

Thus, observations show that the development of Thailand's economy was strongly influenced by improved world economic conditions in the late 1980s. Trade of manufactured goods and services—particularly, exported products and tourism—expanded rapidly. The share of Thai exports to the United States and Japan increased, although the share of exports to the EC dropped. During this period, imports from Japan increased, but imports from the United States declined. Discussants agreed that while it is dependent upon these

three major markets, Thailand should endeavor to expand to other markets as well.

Participants shared the views that in addition to favorable world economic conditions, the competitive quality of Thai products in the international marketplace also contributed to the increase in Thai exports. In fact, policy makers should consider several additional factors and issues for promoting industrial and service development:

- Private enterprise, though traditionally able to penetrate markets, will require government support in the areas of international trade negotiations and diplomacy.
- A special advisory committee for consultation in matters of export and international trade should be established. This committee could also provide encouragement and advice to investors and should report directly to the Parliament.
- Tourism to all provinces should be promoted in order to assure uniform development across the country.
- Investments should be made in the development of raw materials that are presently being imported in order to further reduce the trade deficits.
- The service industry could make a large contribution toward a reduction in the trade deficit, while also continuing to improve and expand. Certain questions should be addressed, namely: (1) How can we help protect or promote the service industries? and (2) To what degree should the service industries be open to international competition?

### THE EXTERNAL SECTOR AND DOMESTIC ECONOMIC DEVELOPMENT

**Chairperson:** *Mr. Kosit Panpiemras*  
Deputy Secretary-General, NESDB

**Presenters:** *Dr. Atchana Wattananukit*  
Associate Professor  
Faculty of Economics  
Thammasat University  
*Dr. Narongchai Akrasanee*  
Executive Vice President, TDRI

**Discussants:** *Dr. Supachai Panitchpakdi*  
Director and Executive Adviser  
The Thai Military Bank  
*Dr. Olarn Chaipravat*  
Executive Vice President  
The Siam Commercial Bank

The discussants agreed that foreign capital inflows (including direct investment, portfolio investment, and loans) have helped the Thai economy to fill in the savings gap. However, both the role and the pattern of net foreign capital flows into Thailand have changed in the 1980s. The significance of foreign loans declined and was replaced by direct and portfolio investments. The manufacturing sector attracted the largest share of direct foreign investments. Portfolio investment—mostly from the United Kingdom, the United States and Japan—was in services, construction materials, and textiles. The pattern of foreign loans has changed—from public-sector to private-sector predominance.

Regarding the factors affecting foreign capital flows, it was agreed that all foreign investment was attracted by the Thai economy's good prospects and anticipated high rates of return. Direct foreign investment, in particular, was found to have been invested primarily on the basis of the life-cycle hypothesis—that is, to maintain the original cost competitiveness by investing in low-cost production sites and exporting the products elsewhere.

The discussants noted that although foreign capital inflows have generally contributed positively to the Thai economy, caution must be taken regarding the pattern of the inflows. Investment fluctuations should be mini-



*Dr. Narongchai Akrasanee, Dr. Atchana Wattananukit, Mr. Kosit Panpiemras, Dr. Supachai Panitchpakdi and Dr. Olarn Chaipravat were the panelists for the Conference's discussion of "The External Sector and Domestic Economic Development."*

mized, and long-term investment should be encouraged. Steps must be taken to assure that direct foreign investment impacts on the ownership structure and that technology transfer—including marketing networking—is favorable to the Thai economy. A more efficient stock listing system should be encouraged. Finally, private loans should be monitored to ensure that the loans are not diverted into speculative or nonproductive areas.

### STRATEGIC ECONOMIC MANAGEMENT FOR THAILAND'S EXTERNAL ECONOMY IN THE 1990s

- Chairperson:** *Dr. Anat Arbhabhirama*  
Governor  
Petroleum Authority of Thailand
- Presenter:** *Dr. Narongchai Akrasanee*  
Executive Vice President, TDRI
- Discussants:** *Mr. Staporn Kavitanon*  
Deputy Secretary-General  
Office of the Board of Investment  
*Dr. Chaianan Samudavanija*  
Professor, Faculty of Political Science  
Chulalongkorn University

The fourth and final session dealt with the implications of opening up the Thai economy and their effect on policy formulation. The discussion opened with the view that the Thai economy's rapid growth in recent years is a result of the formulation of a policy of export and foreign investment promotion. There were uses of macroeconomic policy affecting exchange rates, interest rates, and prices, and other policies directly affecting individual sectors. Following this discussion, there was a presentation on the impact of Thailand's external sector's growth on domestic performance. It was noted that during 1981-85, export expansion contributed 1.7 percentage points to the average growth of real GDP; the contribution increased to 4.4 percentage points during 1986-88. Additionally, a one percent increase in exports led to about a .32 percent increase in real GDP in the 1980s. However, export expansion did raise the economy's overall inflation rate. In terms of internal financial stability, export expansion increased government revenue at a faster rate than its expenditures, which in turn resulted in reducing government deficits and borrowings.

The impact of export growth on income distribution was less favorable. Although the export boom did increase the population's income at all income levels, the

gains were proportionately greater for the top 20 percent income group than for the group at the bottom 20 percent of the income classes. The population in the non-agricultural sector gained more than the population in the agricultural sector. However, although export expansion did not appear to help improve income distribution, the actual culprit of worsening income distribution was determined to be fluctuating commodity prices rather than any other factors.

In addition to addressing the problems resulting from the adverse impact of fluctuating commodity prices on income distribution, conference participants also directed their attention toward the issues of wage adjustments, R&D investment, and the various aspects of productivity improvement that will help Thailand to move up the ladder of industrialization.

Another issue under discussion concerned the disadvantages of export expansion and foreign investment increases. Some participants complained that the boom has caused significant increases in land prices, a shortage of skilled workers such as engineers, and environmental problems. Moreover, there is the problem of local producers being crowded out in the domestic market and for obtaining local sources for materials.

The last session also dealt with policy and strategy options for the external sector. It was postulated that there will be changes in international capital flows and in the world trading system. Foreign capital flows will greatly expand, but the world trade volume might grow more slowly. As a result, while Thailand will continue to gain from increased foreign investment, exports will probably be adversely affected by the current trends of increasing managed trade. Thus, it was agreed that Thailand should continue with a conservative macroeconomic policy and a liberal trade and investment policy in order to maintain international competitiveness. In preparation for the increasing uncertainty of the world economic and trading environment, the Bank of Thailand should be given a more independent role in the formulation and management of the monetary policy. It was recommended that an office similar to the US Trade Representative's office be set up, with authority to conduct trade negotiations and to oversee trade policy and implementation. Finally, a multitrack trade strategy was recommended, in which action would be initiated at all policy and negotiation levels—unilateral, bilateral, regional, and multilateral—with the strongest emphasis placed on unilateral and multilateral actions.

After the fourth session, there was an open discussion, which was followed by Dr. Snoh Unakul's closing remarks.

**TDRI 1989 Year-End Conference papers are available through the TDRI Publications Office at a cost of 2,000 baht per set.**

# Evaluation of the 1989 Year-End Conference: A Summary

Orapin Sopchokchai

The evaluation process is an essential Year-End Conference activity that enables TDRI to assess the conference's performance. Evaluation forms were designed to seek participants' reactions to the conference's substance, information dissemination, papers, presentations, conference facilities and hotel services, the conference's organization, and public relations. We believe that a conference's success can be measured by how the participants rated the conference overall and each session individually; whether their expectations were met; and whether they believed they benefited from attending the conference. In addition, their ratings, comments, and suggestions will help the TDRI organizers to improve future conferences.

We handed out over five hundred evaluation forms to conference participants; 186 forms were completed and returned. Table 1 details the composition of the participants who responded. Both Thai and foreign participants were classified by types of organizations or sectors—the private sector, government organizations and state enterprises, academic institutions, non-governmental organizations, international

agencies, and the media—from which different opinions and reactions could be evaluated. To ensure that the evaluation reflected only the viewpoints of our guests, clients, and outsiders, we eliminated all TDRI ratings and comments.

In the following discussion of the TDRI 1989 Year-End Conference evaluation results, all analyses are based on the non-TDRI response questionnaires. Henceforth, we will refer to the respondent participants or our sample as “participants.”

## RESULTS OF THE ANALYSIS

Judging from the overall conference rating and each session's performance ratings, we conclude that in general, the majority of participants thought the conference was both very good and useful.

### Overall Rating

Participants were requested to consider the conference's content, materials, and facilities, then rated the conference on a scale of 0 (very poor) to 10 (excellent). The average rating score for all groups was 7.71 (good); the maximum score, 10 (excellent); the minimum score, 3 (poor); and the mode; 8 (good). Figure 1 shows the comparison among average scores given by different participant organizational groups. The highest average score was rated by the participants who work with Thai government organizations and state enterprises; it was 8.28, with the maximum score of 10 and minimum score of 6, and the mode of 9. In general, the ratings given by different groups illustrated that on the average, the participant's opinions about the overall conference were ranked from satisfactory (5.33) to good (8.28). We also found that the Thai participants' average rating (7.88) was higher than the foreigners' (7.28), whose participation was limited by the language barrier.

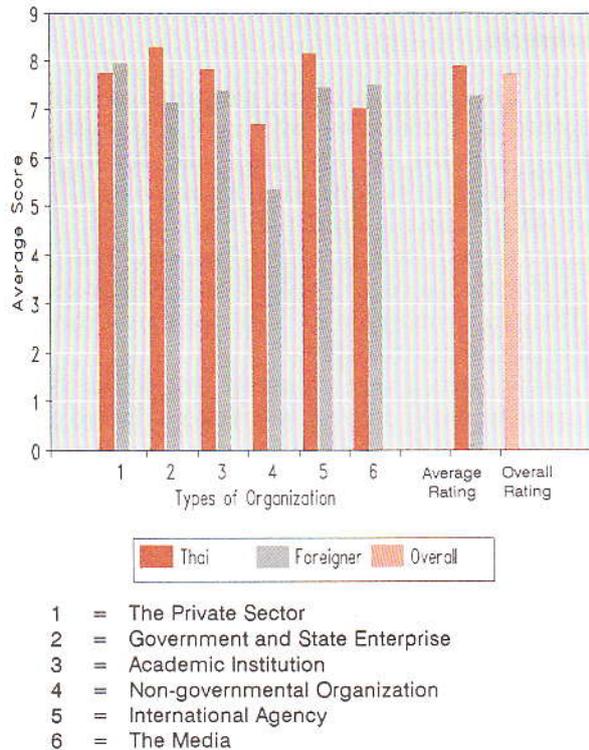
### The Conference's Substance

Those who commented on the conference's substance often mentioned that it was excellent and that it provided a good overview of the Thai economy. They found this year's topic to be very appropriate and said

**Table 1 Returned Questionnaires (by Types of Organizations and Nationality)**

Participants (by types of organizations and nationality)	Numbers	Percent	Rank
<b>Thai Participants</b>			
The Private Sector	52	28.0	1
RTG and State Enterprise	41	22.0	2
Academic Institution	18	9.7	3
Non-governmental Organization	3	1.6	9
International Agency	7	3.8	8
Media	8	4.3	7
<b>Foreign Participants</b>			
The Private Sector	7	3.8	8
GO and State Enterprise	13	7.0	5
Academic Institution	8	4.3	7
Non-governmental Organization	3	1.6	9
International Agency	14	7.5	4
Media	2	1.1	10
TDRI Staff	10	5.4	6
	186	100.0	

**Figure 1 The Comparison of the Conference's Overall Rating**



that many TDRi recommendations were very good. One participant stated that, "I am pleased that TDRi is the only institute that can express its own thinking in the Kingdom of Thailand." Several participants expressed their appreciation for having been invited to the conference and for the knowledge and useful data they gained from it.

Although the overall conference ratings were good, several comments and suggestions are of interest for organizing future conferences. It was mentioned that in some sessions, the presenters spent too much time describing detailed statistics, figures, trends, and historical facts but not enough time on critical analysis and present policy options; and that the substance should be improved to be more concise and to focus more on existing problems, issues, conceptual frameworks, directions, benefits for the country, and practical recommendations. Participants believed that this forum should discuss the implementation process, as all good policy recommendations would be useless without implementation. A participant from the private sector was concerned that the data were quite limited within academic circles and that the opinions were too economically extreme. To make it more practical, TDRi should consider business-oriented facts. In addition, it would have been better if TDRi had included more topics and discussants from various fields and institutions to address different viewpoints. More attention should be given to discussing policy issues and alternative economic scenarios.

### Presentation, Papers, and Speakers

Participants expressed different opinions about the sessions' presentations, papers and materials, and speakers. Presentation arrangement and limited time for each session were two interrelated problems. Indeed, the conference time was quite limited compared to the material that speakers needed to present or provide commentary about. The speakers in some sessions spent too much time describing detailed statistics and methodologies and spent less time presenting important policy issues. Several participants believed that we did not have enough time and suggested that the conference should be scheduled for two full days.

Participants believed that floor discussion and debate would be useful. One stated: "Participants who were from various organizations had many useful opinions; they should have more chance to contribute to others."

While participants mentioned that in general, this year's speakers were good, it was also mentioned that besides economists, multidisciplinary speakers – such as political scientists, social scientists, politicians, and Thai or foreign business executives – should also be invited to express their views. For example, a participant stated: "Panel discussions should include political scientists because economic development has a direct impact on society, and the conference did not emphasize this aspect." Another said: "Politicians should be invited to express their opinions and participate because technical recommendations must be digested through the political process before formulating a useful national policy."

Many participants said that the conference papers were quite valuable and that they would be useful for future reference. However, many participants still insisted that all papers, or at least executive summaries, should be sent to conference participants in advance, in order to give them more time to read the papers and be able to follow the conference's substance or fully participate in the sessions.

### Benefits from the Conference

The question, "Did you benefit from the conference?" was asked in order to measure what each participant believed he or she had gained from attending the conference. Of the total 176 responding forms, 174 participants (98.8 percent) answered this question. Those who answered this question said they benefited from the conference. The majority of them (61.6 percent) said they benefited directly, and 36.9 percent said they benefited from part of the conference. None of the participants said they did not benefit from the conference. More than 60 percent of the Thai participants (65.1 percent) stated that they directly benefited from the conference's content, while about half of the foreign participants (53.2 percent) said the same.

Very few participants made comments or suggestions about this question. Many participants reaffirmed how they benefited from the conference. Their comments included: "I know more about the economy and some of the problems facing Thailand"; "This conference provided good information and knowledge on business policies and their direction for those who had not known previously"; "The conference provided good insight into the workings of Thailand's economic planners and their thinking"; "It produced a scope of awareness on policy, as it related to Thailand and to my interest"; "Gained a better understanding of the Thai Economy and its prospects." A participant complimented the conference by stating: "The presentations were more straightforward and franker than in the previous year."

Over 30 percent of the participants believed they benefited from some of the conference's substance; their reasons varied. For example, a Thai government official who works as a planner said the benefits were from listening to the general economic issues presented during the conference, because this year's topic was not directly related to the assigned function.

### Conference Expectations

Participants' responses to the question: "Did the conference meet your expectations?" were very positive. The majority of participants said their expectations were met. Only one participant said the conference did not meet his/her expectations at all.

About 17 percent of the participants said the conference "more than met" their expectations, and 58 percent of them said their expectations were met. About 22 percent of the participants thought the conference met only some of their expectations. Thus, most of our clients/guests/outside were generally satisfied with the conference's performance, as their expectations were met, and they gained what they expected. The hi-tech audio-visual system was frequently mentioned as having really added color to the conference: "Audio-visual technology more than met my expectations." Besides the visual-aid effort, participants stated the conference was a good forum, with excellent organization and presentation, and that the materials supplied were more voluminous and are a valuable body of information about the Thai economy. As far as the substance was concerned, a participant expressed his/her appreciation of the in-depth analysis on Thailand's economy accomplished by TDRI. Many said they received excellent economic knowledge and information; others added that an opportunity to meet and informally discuss and exchange views among scholars and experts from various fields at the same time was good.

Those who believed that TDRI's performance could be better, as judged by their expectations, made similar comments that were related to floor discussions, too much statistical presentation but not enough analytical

aspects and policy recommendations discussed, and the limited time given individual commentators.

### Recommended Follow-up Activities to This Conference

To better serve our clients, guests and general participants, the Institute was interested in learning what types of activities the conference participants would suggest having carried out after this conference. There were 48 participants answering this question. Some answers were about future Year-End Conferences but most of them related to the 1989 Year-End Conference, and they are summarized into four major areas concerning the conference as follows:

1. Many participants suggested that TDRI should produce the conference proceedings, including the summary of the major points discussed during the conference, papers presented by the international panelists, or the conference tape transcription. They suggested that the proceedings should be distributed to all participants or at least made available to participants who may be interested.
2. Major findings and recommendations from the conference should be disseminated to the general public, the private sector (especially businessmen) and to politicians and policy makers. Participants strongly recommended that some relevant research findings should be integrated within the national policies or used to formulate the National Economic and Social Development Plan. To accomplish this function, they suggested that TDRI should improve our public relations and research dissemination; set up a committee to monitor the conference's results (also prepare a position paper to be submitted to the government) and review further research needed for policy formulation; and find the ways and means to stimulate or convince the government (or politicians) and related implementing agencies to accept and implement such policy.
3. Quite a few participants thought that smaller workshops or seminars focusing on some important or interesting issues should be organized as follow-up activities to this conference, such as a seminar focusing on how to integrate the conference's recommendations into the Seventh Plan, a mid-year economic review conference, and workshops to further discuss each subtopic presented at the conference.
4. Several participants suggested that TDRI conduct further in-depth research on some interesting issues such as income distribution, regional and provincial economy, human resources, international trade and investment, BOI's mandates, roles of technocrats, infrastructure development, and urban land use.

\* Complete copies of this report are available in the TDRI Library.

# A Dynamic Analysis of Thai Agricultural Growth: Some Lessons from the Past

Ammar Siamwalla

Direk Patmasiriwat

Suthad Setboonsarng

Yair Mundlak

**T**his research examines the factors behind the growth of production in Thailand's crop sector during the period of 1961 to 1985. It utilizes province-level data from various sources to estimate the supply functions for agricultural output as a whole and for the groups of crops (i.e., paddy, field crops, tree crops and vegetables). Investment by the public sector for promoting agriculture through irrigation, agricultural research activities, and extension works are also examined. They are assumed to raise agricultural productivity.

## ANALYSIS

The analysis addresses the following topics:

- Labor productivity and the supply of crops
- Supply of crops by group
- Speed of the planted land expansion
- Labor migration

A pool of cross-section and time-series data is used to test the hypotheses based on economic theory.

### Supply of Crops

The model covers 20 crops whose total value added share is about 75 percent of the total crop sector. This supply measure increased by 69 percent in the period 1961-1985, equivalent to an increase of 2.4 percent per year. This research examines the underlying factors contributing to this growth. Some of the findings indicate that:

- Increases in crop supply were due to an increased application of factor inputs (land, capital, and labor – particularly, land).
- Farmers were motivated by price incentives (i.e., they increased the crop supply in response to better prices).

- Schooling is by far the most important factor in raising agricultural productivity, but irrigation and agricultural research also have a measurable impact.

### Supply of Crops by Groups

The 20 crops covered in this study are grouped into four categories: paddy (wet- and dry-season); field crops; tree crops; and vegetables. The analysis examines the supply response of crops by estimating the revenue shares of crops by region. Own- and cross-supply elasticities are estimated for each region. Some of our findings confirm that:

- For most regions, farmers were motivated by price incentives (i.e., a higher price for a particular crop would motivate farmers to produce more and to draw resources from the competing crops).
- Research activities tended to strengthen crop diversification away from rice.
- Conversely, irrigation prevented diversification away from rice.

### Expansion of the Cultivated Land

Expansion of the planted land was included as part of the model. The model assumes that farmers opened the land frontier in response to opening opportunities and to price incentives. The findings confirm that:

- The combination of land availability and crop yield per area was the most important factor contributing to land expansion.
- Irrigation tends to slow down land expansion.
- Education motivated farmers to do intensive farming, as they could attain higher productivity from the same piece of land.

## Labor Migration

Labor migration across provinces is also examined. The net flow of interprovincial migration is used as a measure of permanent migration. Results from this study confirm that:

- Wage differential was an important factor motivating migration across provinces.
- New road building stimulated more net migration to the region.

## APPLICATIONS

### Growth Accounting

This exercise also estimates the sources of growth in Thailand's crop sector during the study period (1961-1985). Some of our findings indicate that:

- The importance of technological progress—measured in terms of human capital, irrigation, and the agricultural research budget—was substantial. Its contribution was about 50 percent.
- Although land was confirmed an important input, its contribution to the growth of supply was only about one-third (much less than commonly expected). While land played an important role in the period prior to 1977, the decrease in per capita available land has diminished its importance.
- Higher crop prices contributed about 15 percent to the growth of crop production, particularly in the first subperiod (1961-1977). The fall in crop prices in the period 1982-86 adversely affected poor performance and farmers' income.
- Fertilizer prices were made cheaper—most notably after 1975—by the government's policy of allowing more competition in this market. This had some impact on raising farm productivity.

**Table 1 Output Growth per Capita and Its Sources (percent per annum)**

Sources	1961/63 to 1976/78	1976/78 to 1983/85	1961/63 to 1983/85
Output Growth per Capita	3.13	1.38	2.41
Attributable to:			
Output price	0.19	-0.61	-0.06
Fertilizer price	0.27	0.16	0.24
Land per labor	0.90	-0.50	0.47
Capital per labor	0.59	0.43	0.53
Schooling	1.17	1.12	1.10
Research and irrigation	0.51	0.01	0.39
Unexplained residual	-0.50	0.76	-0.26

Source: See "Sources of Growth of Agricultural Production, 1965-1985: Analysis based on TDRI model." *Settasat Thammasat* 8, No. 1 (March): 43-69.

## Long-run Supply Response

This simulation exercise assumes a 10 percent price increase for all crops from 1970 onward, and it estimates the amount of supply response. Our results suggest that:

- While crop production would be raised by 8-9 percent for the whole Kingdom, the magnitude of response varies from region to region.
- Supply responses tended to be higher in the Lower North, the Northeast, and the South, due to the availability of resource endowment.

## Policy Liberalization

This simulation exercise raised the question of what would have happened to output and farmers' income had the government abolished the restrictions that were applied against the rice trade (particularly, the rice premium and the rice quota) at the beginning of the study. Our counter-factual analysis suggests that:

- The domestic rice price would have been raised by 40 percent despite a marginal fall in the world rice price.
- The better rice price would have stimulated the supply of rice and would have drawn resources away from other activities.

As a result, the aggregate supply for crops was estimated to be 5 percent higher. This implies that farmers' income could have been raised by approximately 45 percent by government policy liberalization in the study period. The welfare implication is not given in this exercise, as it is beyond the scope of this research project.

## FORECAST TO THE YEAR 1995

The same model is used for forecasting purposes. Analyzing the status of Thailand's crop sector in the future (up to the year 1995) is mainly based on two sets of assumptions: resource endowments and crop price expectations. The crop supply is projected to grow by 2.3 percent per year in the early 1990s. This will be a slowdown in terms of the growth of our crop sector compared to its past performance. The underlying factors are:

- Limited future land expansion as well as limited irrigation development due to an inadequate water supply.
- Lower crop prices as a group (measured in real terms).

It should be mentioned that these are merely a projections and are subject to change by assumptions.

# The Thai Economy in 1990: Problems and Prospects in the External Sector

Phaichitr Uathavikul

*Mr. Prime Minister, Mr. President of the Thammasat Economic Association, Ladies and Gentlemen:*

I have been asked to speak on the policy dimension arising from the relationship between the domestic economy and the rest-of-the-world sector. It is therefore necessary to have a longer time frame than just one year. In fact, what I shall be presenting this morning will be based on the research work being carried out at the Thailand Development Research Institute, which is aimed at an exploration of this problem up to The Year 2000.

Obviously, the substantive areas subsumed under the topic are very extensive and complex. TDRI will be presenting some of the research results at our annual Year-End Conference at Jomtien, in the middle of the month. We have also invited a number of leading economists from abroad to speak on the world economy and the prospects for the Thai economy. Because of the very limited time available, I should like to show you, if I may, a "trailer" of the real presentation. For those who are interested, you can see the whole movie, so to speak, at Jomtien on December 16 and 17. For now, I hope to be able to explore very quickly three interrelated issues: firstly, the world economy; secondly, its impact on the Thai economy; and thirdly, policy implications.

With regard to the world economy, I should like to raise two issues only for your consideration. The first is the issue of the prospect for growth of the world economy, which has already been admirably dealt with by the previous speaker, Dr. Amnuay. There is no point in repeating what was said, except to point out that our own studies yield essentially the same results, indicating a slowing down of the global economy. This is because of several problems—including the imbalance among major economies, leading to the need for adjustments, especially in the U.S. economy, and the debt problem, which has not been tackled in a systematic and effective manner since its inception in 1982. Our main concern is to assess the overall impact of such a slowdown on the Thai economy in 1990 and beyond. I am happy to report that our studies indicate this slowdown will not have much impact on the growth of the Thai economy because, although Thai exports have been rapidly growing over recent years, they constitute only one-half of one percent of world imports. Thai exports are not very elastic in relation to the income of our trading partners

but are much more dependent on our ability to compete and to expand or at least maintain our market shares. If this conclusion is correct, what does it imply in terms of appropriate policies which should be pursued? It should be fairly obvious that one of the most important policy considerations would be the maintenance of our competitive position in the world market. If we allow this position to be eroded, we shall not be able to maintain the level of exports necessary for a satisfactory future growth of our economy. The question of our ability to compete will thus remain the central policy consideration for the foreseeable future.

If that is the case, we should then go on to briefly explore some of the major factors affecting our ability to compete. The first factor I should like to touch upon is the foreign exchange rates. Let me just say in conclusion that our studies indicate there is a tendency for the values of the currencies of most of our major trading partners and competitors to appreciate vis-a-vis the baht. The value of the baht should therefore continue to be a positive factor, unless we do something drastically wrong in our overall monetary policy. The second factor concerns inflation. I really do not wish to say anything about this matter, but there is no way to avoid it, because inflation affects not only the consumers but also the competitiveness of our goods and services. If we allow domestic inflation rates to exceed those of our major trading partners and competitors on a sustained basis over time, our competitive position will be continually eroded to the point where we shall not be able to maintain the necessary level of exports. So, however distasteful this problem might be for some politicians, it is necessary to tackle it because it lies at the heart of our future competitiveness. The third important variable is the one about international capital movements and foreign direct investment. Our analysis indicates that we should be able to maintain our relatively favorable position provided that we are able to maintain the high level of economic, financial, and political stability which have been achieved in recent years.

On the other hand, there are also factors which are not favorable in terms of maintaining our competitive position. The first is the lack of an indigenous scientific and technological base of our own. Up to now, our

*An excerpt from a speech given (in Thai) at a Thammasat Economic Association Conference held on December 1, 1989.*

development has been based almost entirely on imported technological know-how, without much attempt at building up our own capabilities. This weakness will become an increasingly important handicap in our attempt to compete in the world market. A second obstacle is the shortage of a skilled and semi-skilled labor force, which, in turn, is a result of our education system. This situation must be rectified as soon as possible; otherwise, we shall not have a sufficient trained labor force for sustained development and for maintaining our competitive position. Another deficiency is the infrastructure constraint in such areas as sea ports, transportation, telecommunications, and public utilities, which seriously affects our capability in production and trade.

In short, we may conclude that we should be able to maintain our competitive position if we do not commit too grave an error in our management of the economy. I should like to add, if I may, that this is a primary responsibility of the government and that it is a complex matter which would require careful analysis and rational decision making rather than emotional reactions.

Let me proceed quickly to the second aspect of developments in the world economy, namely, the problem of protectionism. Because of the time constraint, I should like to deal briefly with two related issues, i.e., regional groupings and unilateral action by trading partners. Some mention has already been made this morning of the problem of regional groupings. I should like to raise the issue of Europe 1992 for your particular attention. In spite of what might have been said about the absence of any intention to create more protectionism, the creation of the single market will entail a substantial potential danger of increased protectionism. Large and powerful economies can protect themselves and cushion the impact of such an increase if and when it occurs. Already the United States and Japan are making heavy investments in Europe so that, no matter what happens, their national interest and competitive position will be safeguarded. As a small country, Thailand is not in a position to adopt the same protective measures. What we can do is much more limited and will consist of a two-pronged approach. The first is to find allies wherever we can find them, such as in the case of ASEAN, which unfortunately does not have much economic muscle. A potentially more powerful grouping such as the APEC (Asia Pacific Economic Cooperation) group is still very much in the inception stage, and there is no clear indication of future direction and what might be accomplished by such a grouping. The key policy consideration in this connection is the need to keep all options open and to adopt a flexible attitude in our own management of future relations with major trading partners and competitors. A second strategy is the diversification of trade and investment activities so as to lessen our dependence on major markets and investment sources. The initiative of the Prime Minister

in trying to change Indochina from a war zone to a trade zone is a case in point.

Another major problem is the tendency of trading partners to take unilateral action, often based on domestic political expediency rather than on rational trading considerations. In addition to the Rice Title in the Farm Act, which has had a serious adverse impact on our own rice exports, the United States is increasingly making use of the super-301 clause in its Trade Act to force further trade concessions from Thailand. The European Community has also had a considerable impact on our export of agricultural commodities through its implementation of the CAP (Common Agricultural Policy). In addition, there has been a proliferation of such measures as countervailing duties, anti-dumping measures and a host of non-tariff barriers (NTBs) which constitute an increasing impediment to world trade. The main policy implication of these developments is the need—as a matter of utmost urgency—for us to enhance our capability in trade negotiations. Otherwise, it is hard to see how we are going to survive the next round of rising protectionism and unilateral action. And in this connection, I have to submit respectfully that this is the direct responsibility of the government. Our trading partners are making more and more use of their sovereign power to control trade and intervene in trading matters. In response, we shall have to employ, as far as we are in a position to do so, our own sovereign power to counteract some of the unfavorable impacts. We cannot leave it to the private sector to deal with the problem by its own devices because only the government has the sovereign power to act.

In the case of Thailand, let me just single out the question of managed trade for further consideration. We have found from our studies that managed trade has become a major characteristic of our international trade and that its importance is rapidly rising. In 1988 managed trade accounted for as much as 18 percent of our total trade. And if we limit ourselves to our three major markets, namely, the European Community, the United States, and Japan, the proportion rises to one-third—with the European Community the clear leader at 53 percent, followed by the United States and Japan at 25 percent and 14 percent, respectively. The affected goods are either major export items or items with good growth potentials. They include such items as textiles and garments, tapioca, steel pipes, ball bearings, canned fruit, canned seafood, sugar, tin, rice, coffee, frozen seafood, frozen chicken, and seasoning powder (monosodium glutamate). Managed trade has thus clearly become a major concern which needs to be handled effectively by both the government and the private sector.

If our analysis is not entirely wrong, it should be clear that we must seek to maintain two basic elements of our economic policy and management, namely, our ability to compete in the world market and a high level

of economic and political stability. And in order to achieve these twin objectives, we should steadfastly pursue two basic policies — our economy should stand, in a manner of speaking, on two pillars. The first is fiscal and monetary discipline; the second is liberal trade and investment policies. I should like to devote the rest of the time available this morning to a discussion of these two fundamental policies.

Starting from the problem of fiscal discipline, all I should like to say is that I have discussed this issue extensively elsewhere. The only thing I should like to add this morning is to stress the need for a careful consideration of the expenditures of SOEs (State-owned enterprises), as these are going to be very substantial in the near future. The issues we need to consider are twofold — project feasibility and appropriate financing. Assuming that careful project screening will continue and only worthwhile projects will be adopted, then the problem of financial planning will be of critical importance. It is not enough to pay attention only to the central government budget, because we shall miss the problem entirely. As for monetary discipline, we shall have to spend a little more time on this matter, as we do have some severe problems.

When the economy is rapidly expanding, there will be pressure on prices. Whether the inflationary pressure can be contained depends on several variables, chief among which is the monetary factor. Thus, the key issue in this connection is the management of our monetary policy, which remains problematic because of problems in the use and control of monetary instruments. Let me put it this way: Guiding the monetary system in the right direction and maintaining appropriate balances are delicate matters requiring a high degree of expertise. At the same time, monetary measures are rather “blunt” instruments which tend to have serious repercussions on all aspects of the economy. Therefore, the user of these instruments will have to take political implications into serious consideration. For this reason, it is customary for most countries to seek and maintain an “appropriate” balance between the technical and political arms of the government. We cannot leave it purely to the technicians nor to the politicians. In our case, we have been pursuing this approach in the past by relying on the basic premise that all parties involved in implementing the policy were well versed in the problems involved and were thus able to honor the traditional practice of checks and balances. That is no longer the case. And if we cannot rely on traditional practices, then the only safeguard possible is to rely on the law. For this reason, we shall have to amend the laws governing the operations of the Bank of Thailand as soon as possible. This is a matter of great urgency, as we cannot allow such an institution as the central bank to deteriorate any further. If we let it decline to a certain low level, it may be extremely difficult to revive it as the main instrument for the proper

management of the monetary system. Such a development would pose a serious threat to the maintenance of future economic stability and to the whole process of development. Thus, we shall have to amend the laws to ensure that the operations of the central bank will be based more on sound practices rather than on personalities. Let me stress that I am not bringing up this matter because of particular personalities involved, but as a matter of principle which concerns the welfare of the country as a whole.

Let us now turn to the second set of policies, namely, a liberal trade and investment policy. By this I do not mean a “free-for-all,” where everyone is free to do whatever he wants. What I mean is that in the domestic market, the government will have to establish clear and explicit “rules of the game” and then let the private sector compete freely within the framework of those rules. Competition is the key and the indispensable ingredient for increased efficiency, and efficiency is, in turn, the key to ensure our ability to compete in the world market. We must not do anything to jeopardize free competition in our economy by creating oligopolistic or monopolistic situations, especially through the use of political power. “Cronyism” is thus a serious and basic threat to the continued well being of our economy and the prospect for future growth and development. Internationally, we shall have to learn to make better use of our sovereign power to protect our legitimate trading interests. It is time that we reopen the issue of how best to enhance our collective ability in trade negotiations. Both the bureaucracy and the political parties should stop being concerned about gaining or losing authority and perceived advantages. If the country cannot survive, then neither the bureaucracy nor the political parties can survive either. We simply have to learn to protect ourselves more effectively in trading conflicts which are becoming ever more intense. As the Prime Minister is present, I should like to respectfully submit that it would be worthwhile to take another look at the issue of the creation of a trade representative office. As for investment, I shall have the time only to say that we have been pursuing a certain line of investment promotion for almost thirty years. There are several serious problems in the approach, and the situation has changed drastically in recent years. There is, therefore, an urgent need to reconsider the whole approach and a set of policies to ensure that we can reap more benefit from the investment promotion activities, both for the majority of the people and for the country as a whole. Time does not permit any further discussion, so let me just say that the government has already set up a high-level committee to consider the matter, and we shall have to await the results of its deliberation.

As I said at the beginning, this is only a trailer of the real movie, and we are looking forward to seeing you at Jomtien on the sixteenth and seventeenth of this month. Thank you very much for your time and attention.

# Mineral Resources Development: Status of and Issues in the Mineral Industry

Quanchai Leepowpanth  
Duangjai Intarapravich  
Sunt Rachdawong

**M**inerals have played an important role in Thailand's economy. Geologically, Thailand has a variety of mineral resources—including tin, tungsten, lead, zinc, lignite, feldspar, kaolin, limestone and gypsum. Minerals should be recognized as a nonrenewable resource, whose contribution as raw material for mineral-based manufacturing and engineering industries can be substantial.

Given the importance of mineral resources, Thailand's mineral policy has not been clearly defined, and this lack of a well-formulated mineral policy has resulted in inappropriate mineral exploitation and utilization, environmental complications, and poor mineral conservation. Thus, a well-defined national policy and planning effort for mineral resources development is necessary, particularly because of the current climate of rapid industrial development.

This paper is part of the Mineral Resource Development Project being carried out by the Natural Resources and Environment Program (NRE) at TDRI. The study's objective is to formulate a well-designed strategy for mineral resource development that will correspond with the current direction of national economic development. The study has been undertaken with the joint cooperation of the Department of Mineral Resources and the Mining Industry Council of Thailand.

## PREVIOUS NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT PLANS

The development of mineral resources has lagged behind that of other natural resources such as forestry, land, and water. Since the initiation of the First Plan (1964-1966), development of the mineral sector has been included as an objective of national economic development in order to ensure that the mineral industry will be developed in a manner consistent with development in other economic sectors. However, upon analysis, the strategies and measures adopted in all five previous plans as well as the current Sixth Plan appear to have

been formulated according to the existing situation at the time of implementation, without consideration for long-term planning. One apparent oversight is that the plans failed to set up an assessment mechanism that could effectively monitor actual progress or evaluate the results of the implemented plans.

Minerals have been regarded as an export earning commodity in all the previous National Economic and Social Development Plans. A large volume of the minerals mined has been exported without further refining or value addition. This occurred most notably during the Fourth Plan (1977-1981), when mineral exports reached peak levels. Since the Third Plan (1972-1976), the importance of utilizing indigenous minerals as raw materials in domestic mineral-based manufacturing has begun to be realized to some extent. However, progress by the local mineral-consuming industry has been slow and thus has been overshadowed by the large volume and value of export minerals.

The same problems that have been recurring since the First Plan can be listed as follows:

1. The promotion has been primarily concentrated on production of minerals for export, with the remainder allocated for local consumption. Thus, local utilization almost always takes a secondary role instead of a primary role. This has been depriving the country of an opportunity to increase the value-addition of the minerals as well as the chance to develop downstream industries domestically.
2. There is an ongoing existence of illegal mining activities and encroachment into the others' property—such as in the offshore tin areas in Phang-nga, the Wolfram area at Khao Soon and in other rich mineral areas—resulting in a loss of government revenues, destruction of resources, and low economic returns.
3. There is lack of coordination among government agencies such as agriculture, forestry, water, fishery, tourism and mining. Because many of the mineral deposits exist in areas that lack a specific focus

toward their utilization, the deposits in certain areas cannot be developed.

4. Sufficient basic infrastructures, such as access roads and electricity, are not provided by the government. Thus, small-scale mine operators, who constitute the major group of mine operators in the country, cannot afford to shoulder the cost of providing the necessary infrastructure requirements.
5. The producers' lack of financial assistance, technical services, and relevant marketing information have resulted in inappropriately developed technology and unsystematic resource management.

### CURRENT STATE OF THE MINERAL INDUSTRY

A total of over 40 minerals have been developed and exploited in the country. As shown in table 1, the values for local consumption of minerals have been consistently rising, while the export values of minerals have generally declined, indicating the definite trend toward utilization of minerals to gain value added. The manufacturing sector's contribution to total GDP is over 20 percent – of which 30 percent is derived from mineral-based manufacturing and engineering industries.

Among the 40 minerals produced, only 20 minerals are considered to be important enough for further studies due to their sizable production value. These 20 minerals can be divided into two groups, according to their main markets:

- **Export-Oriented Minerals:** Antimony, barite, fluorite, lead, tin, tungsten, tantalum-columbium minerals
- **Consumption-Oriented Minerals:** Ball clay, feldspar, gypsum, kaolin, glass sand, iron ore, limestone, lignite, manganese, potash, phosphate, rock salt and zinc

Export of minerals – mainly, the minerals in group 1 – has substantially decreased since 1980. The contribution of mineral exports to the country's total export earnings and GNP is not significant: only 1.5 percent and 0.36 percent, respectively. Presently, the role that minerals play in the economy has been changed toward

internal uses, such as raw materials in the mineral-based manufacturing industry, with only a surplus being exported.

The domestic consumption-oriented minerals are used mostly as raw materials in four manufacturing industries:

- Cement manufacturing
- Glass and ceramics manufacturing
- Metallic industries
- The energy sector

These manufacturing industries consume about 96-97 percent of the country's total mineral consumption. The per capita consumption of minerals in these four categories is increasing.

Substantial value addition is realized from the mineral-based manufacturing industry. To ensure long-lasting maximum value addition through the use of indigenous minerals, attention should be drawn to these manufacturers so that a sufficient, good-quality supply of mineral raw materials will be maintained. Mineral reserves for supplying future needs are a major concern. Known reserves of some important minerals – such as zinc, gypsum, and lignite – have a limited exploitable life, even when considered at a freezing of the current level of demand. Since the current known reserves of these minerals are definite, the immediate strategy should be to improve reserves by instituting depletion control measures.

One of the major elements in the mineral industry is technological input. Technology in the mineral industry generally consists of five main areas – including mining, mineral processing, metallurgy, utilization, and environmental protection. Evaluation of technology status was obtained by observation of actual technological applications in mineral production and utilization. Large-scale operations sufficiently apply technology to production and utilization, whereas small-scale mines lack efficient technological input. Environmental protection technology is an important aspect, in which both large- and small-scale operations should be concerned. Research and development and consultancy services are important factors for improving the technological capability of the mineral industry.

**Table 1 Mineral Production, Consumption and Export**

Total Value	Million baht at constant 1980 price				
	1970	1975	1980	1985	1988
Production	5,525.0	5,523.9	13,973.9	10,365.8	10,752.6
Consumption	207.3	237.2	722.6	3,854.9	6,175.7
Export	5,291.8	5,485.0	14,934.6	7,153.6	4,141.1

## CLASSIFICATION OF CRITICAL MINERALS

It is fortuitous that the country is endowed with relatively rich mineral deposits, although they are scattered. The raw materials required for developing manufacturing industries can be supplied from these presently limited known reserves. Mineral supplies will be critical if existing reserves are limited or unknown, and they will be accompanied by a rapid rate of consumption, since they are the essential raw materials required by the domestic manufacturing industry. Less critical minerals are those raw materials with larger reserves. In addition, minerals having high or potentially high consumption in the present and future, but having known potential reserves might also be categorized as potentially critical minerals.

Based on these definitions, minerals can be categorized as follows:

### Critical Minerals

- Metallic Minerals – Zinc
- Cement Raw Materials – Gypsum
- Ceramic Raw Materials – Ball Clay
- Glass Raw Materials – Silica Sand

### Less Critical Minerals

- Metallic Mineral – Lead
- Cement Raw Materials – Limestone
- Ceramic Raw Materials – Kaolin, Feldspar
- Energy – Lignite

### Potentially Critical Minerals

- Iron Ore
- Copper Ore
- Aluminium Ore
- Rare Metal Minerals
- Potash
- Rock Salt

Classification of minerals would lead to appropriate management strategies and the appropriate policy guidelines to ensure a stable supply at a reasonable cost to meet future demands.

## ISSUES IN THE MINERAL INDUSTRY

The following issues have emerged from the development of the mineral industry in the past and require a closer look from the government:

- Should the direction of mineral industry development be adjusted toward a more internal-consumption-oriented one, with a surplus for export in order to gain more value added benefits to the country?

- What would be the controlling measures and regulations of the mineral trade for low-priced minerals like gypsum and feldspar when local utilization assumes first priority over exports?
- What would be the appropriate legal and regulatory framework for a more efficient control of resources to utilize the existing law to regulate the trade of certain minerals?
- How can the exploitation of resources be intensified while maintaining the same or even better quality of the environment?
- How can land-use prioritization be identified so that natural resources will be developed according to economic priorities?
- How can the technological practices in the mineral industry be improved, and how can more technical knowledge be transferred to the industry?
- How can taxes such as royalty and municipal taxes be used to stimulate mineral investment?

These major issues require a well-formulated master plan and a practical management strategy. National mineral policy guidelines should soon be defined before any measures can be implemented.

## CONCLUSION

Development of mineral resources is observed to be directed toward more internal utilization in domestic industries with a smaller surplus for export. Secondary mineral industries or mineral-based manufacturing industries demand minerals as raw material input, especially in the existing important, fast-growing cement, glass and ceramic, metallic, and energy manufacturing industries.

The anticipated high future demand of mineral raw materials necessitates a greater and more efficient supply. The minerals that have limited currently known reserves with high consumption in industries—such as zinc, cement raw materials, glass and ceramic raw materials, and energy materials—will become even more critical if additional reserves cannot be improved.

Environmental coordination with the Office of the National Environmental Board and the existing legal and regulatory framework are the avenues that should be pursued in revising a mineral resources plan. Technological availability, including human resources, must be taken into consideration for efficient, systematic planning.

It is the government's duty to take the initiative in eliminating the obstacles precluding the development of the mineral sector while also preserving the environment. Fulfilling this obligation will require skilled management. Thus, more systematic mineral management strategies and a stronger emphasis on domestic development should be initiated with the Seventh National Economic and Social Development Plan.

## NEWSBRIEF

### ANNOUNCING TDRI'S 1990 YEAR-END CONFERENCE

#### *"Industrializing Thailand and the Impact on Its Environment"*

Plans are underway for organizing TDRI's 1990 Year-End Conference, which will be held on December 15-16, 1990. Topics for the conference will evolve around three central themes concerning Thailand's current industrialization and its effect on the environment. Following is a list of the conference papers that TDRI's Natural Resources and Environment (NRE) Program will be preparing in conjunction with the 1990 conference:

#### **Theme #1: Thailand's Natural Resources in the Year 2010**

- Natural Resources (Land and Forest) Projections into the Future
- Natural Resources Management, Rural Development and Income Distribution
- Water Demand and Supply by 2010 and Their Policy Implications
- Resources for the Future (synthesis paper)

#### **Theme #2: Industrialization, Urbanization, Energy and Environment**

- Industry and Environment
- Urbanization and Environment
- Energy and Environment
- Industrializing Thailand and Its Changing Environmental Quality (synthesis paper)

#### **Theme #3: Mineral Resources and Economic Development**

- Mineral Resources Development Potential of Thailand

An additional paper that details an information system for natural resources and environmental management is also being prepared for the conference.

The present and future impact of industrialization upon Thailand's natural resources is an issue of vital concern to both Thai and foreign governments, private industry, the media, and all individuals who care about the quality of life in Thailand now and in the future. Additional details and information about attending the conference will be provided in the June Quarterly.

### The Third Annual "Thailand in Transition" Photography Contest

#### SAVE OUR ENVIRONMENT

In conjunction with the theme of its 1990 Year-End Conference, the Thailand Development Research Institute Foundation, together with the Photographic Science and Printing Technology Department of the Faculty of Science, Chulalongkorn University, and Kodak (Thailand) Limited is sponsoring the "Thailand in Transition III" photography contest entitled, "Save Our Environment." The contest is slated to open on April 1 and will close on August 31. Brochures detailing the contest will be distributed through TDRI and Kodak.

#### THE THEME:

Contestants will be asked to capture the existing beauty of Thailand's natural environment and to show how the country's transformation from an agricultural to an industrialized country is affecting its natural resources and its environment.

They will be asked to focus on the solutions as well: community groups organizing local forestry programs in rural villages; industries using clean technologies in their factories; organizations like Magic Eyes and The Wildlife Fund, who are interested in preserving Thailand's environment.

The contest is open to all Thai and foreign photographers. Cash awards of 10,000, 6,000 and 3,000 baht will be given to the top three winners. Selected photographs will appear in a special exhibition at the conference as well as in TDRI's annual report and the Quarterly Review.

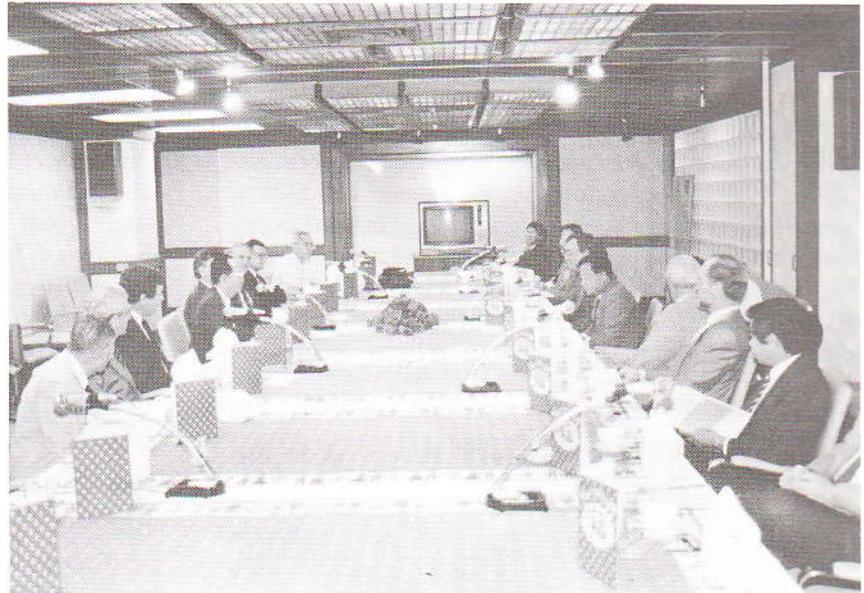
#### Focus on TDRI Personnel

EIU: Dr. Tienchai Chongpeerapien's paper on the Development of the Energy Policy in Thailand has been accepted for publication in a book entitled "Energy Policy and Problems in ASEAN" to be published by the Institute of Southeast Asian Studies (ISEAS) in Singapore.

ARD: Dr. Ammar Siamwalla has been asked to join the Governing Board of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). A non-profit agricultural research center created in 1972, ICRISAT is supported by the Consultative Group on International Agricultural Research, an association of national governments, international and regional organizations, and private foundations dedicated to supporting a system of agricultural research centers and programs around the world.

## Foreign Chamber of Commerce Leaders Visit TDRI on February 16

Representatives from 13 foreign Chambers of Commerce recently visited TDRI to learn about the Institute, its programs, and its current research activities. The seminar included a presentation by Dr. Dhira Phantumvanit, Mr. Sapon Chomchan and Mr. Paul Hastings of the Institute's NRE program to promote increased business participation in natural resources and environmental management in Thailand and to discuss TDRI's research and capabilities in this area. The presentation included an introduction to Geographic Information System (GIS) technology and its applications to the private sector, and a discussion of the preliminary results of the NRE study of land use patterns and industrial development in Samut Prakarn Province. These research activities, as well as an analysis of current and future trends in business-environment in-



*Chamber of Commerce leaders were shown the slide/video, "Introducing TDRI," during their recent visit to the Institute.*

tegration, were summarized in the paper, "Business and Environment in Thailand: The Shape of Things

to Come and the TDRI Response" which was distributed to seminar participants.

### Dr. Johannes F. Linn of the World Bank Speaks at TDRI

On February 22, well-known economist Dr. Johannes F. Linn spoke about "World Debt and Macroeconomic Conditions" at TDRI. Dr. Linn, who has extensive experience in the area of world economic problems and policies, is with the World Bank in Washington, DC.



### TDRI Publishes Two Research Monographs: *A Land Policy Study and Rural Credit Markets in Thailand*

TDRI's third and fourth research monographs will soon be available for sale and distribution.

*A Land Policy Study* marks one of the first attempts to provide a comprehensive analysis and review of land policy issues in Thailand. The research is part of a series of studies focusing on the management of Thailand's natural resources, which have been undertaken by TDRI. By publishing and disseminating reliable reports based on these studies, TDRI's Natural Resources and Environment Program (NRE) hopes to generate wide discussion at both the national and international levels regarding appropriate policies for managing Thailand's rich—yet limited—natural resources.

The Executive Summary of *Rural Credit Markets in Thailand*

(published in Thai) notes that credit markets in rural Thailand have changed very rapidly in the last two decades. "The most important change has been the expansion of the role of organized or formal lending institutions in the supply of credit to the rural population." TDRI, the Thai Khadi Research Institute, and the Faculty of Economics of Thammasat University together undertook this study to explore the structure, conduct, and performance of the credit markets that emerged from these changes.

Please use the order form provided in this month's Quarterly to order these books, to subscribe to other TDRI publications that are listed or to subscribe to the "TDRI Publications Package".