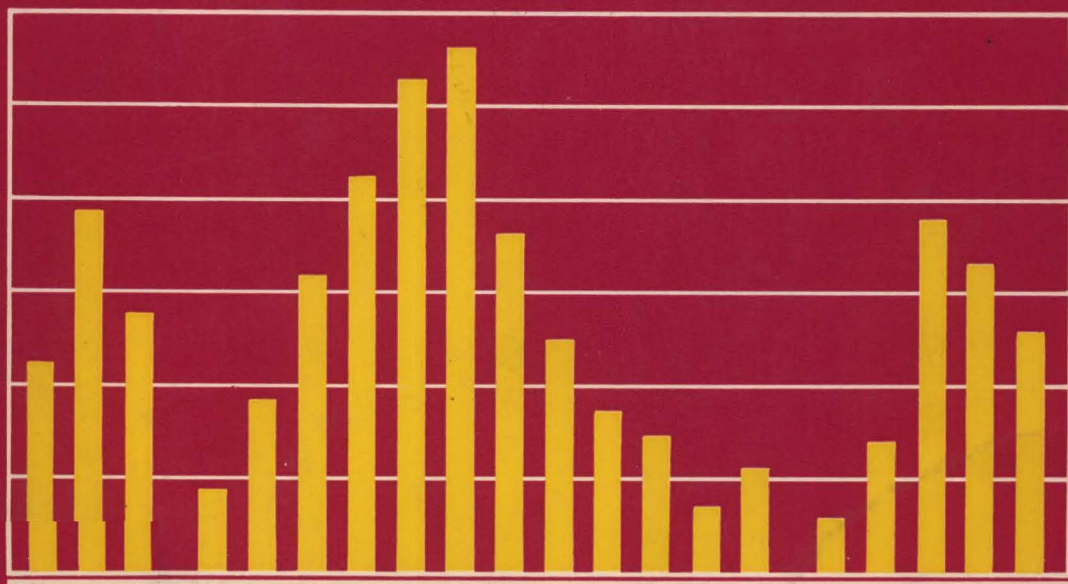


FINANCE, TRADE AND ECONOMIC DEVELOPMENT IN THAILAND


Essays in Honour of Khunying Suparb Yossundara



PUEY UNGPHAKORN and others

FINANCE, TRADE AND ECONOMIC DEVELOPMENT IN THAILAND



 เนื้อหาทั้งหมดใน OpenBase ถูกเผยแพร่ภายใต้สัญญาอนุญาต Creative Commons Attribution-Noncommercial-Share Alike 3.0 Unported License ท่านสามารถนำเนื้อหาทุกชิ้นไปใช้และเผยแพร่ต่อได้ โดยต้องอ้างอิงแหล่งที่มา ห้ามนำไปใช้เพื่อการค้า และต้องใช้สัญญาอนุญาตชนิดเดียวกันนี้เมื่อเผยแพร่งานที่ดัดแปลง เว้นแต่จะระบุเป็นอย่างอื่น



Khunying Suparb Yossundara

Finance, Trade and Economic Development in Thailand

Essays in Honour of Khunying Suparb Yossundara

Edited by

Prateep Sondysuvan

Sompong Press

1975

© 1975 by P. Sondysuvan, N. Akrasanee, O. Chaipravat, S. Jinachitra, U. Kerdpibule,
C. Nitibhon, P. Pakkasem, S. Panitchpakdi, S. Punnarugsa, V. Ramangura T. Roongtanapirom,
A. Siamwalla, P. Ungphakorn, P. Wattanasiritham, C. Wibulswasdi, W. Wonghanchao.

*All rights reserved. No part of this publication may be reproduced,
stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical,
photocopying, recording or otherwise, without the prior permission of the copyright owners.*

Sole distributor: Mrs. Jada Wattanasiritham
for Khunying Suparb Yossundara Foundation,
c/o Department of Economic Research, Bank of Thailand,
Bangkok, Thailand.

PRINTED IN THAILAND

Preface

Fellow economists, students and colleagues of Khunying Suparb Yossundara, the first woman executive director of the International Bank for Reconstruction and Development, first conceived the idea of writing a volume of essays to express admiration, esteem and affection for her and her work when it became known that she might have to refrain from undertaking her customary load of work at the Bank of Thailand due to illness. She had approved and given her appreciation to the idea of this book before she passed away on 26 March 1974. Now the book becomes a memorial volume.

The present volume, the first one to be produced by Thai economists, is intended to reflect Khunying Suparb's wide interests in various aspects of the Thai economy. The contributions are therefore grouped around three major themes to which Khunying Suparb had made great contributions: finance, trade and economic development in Thailand. Her other special interest and activity to which she devoted much of her time and a great deal of energy prior to her death was international monetary reform. Hence it was deemed appropriate that, in Part 1, the 1974 Per Jacobsson essay by Dr. Puey Ungphakorn, Thailand's most renowned economist, should be presented as a fitting tribute to this remarkable woman.

In Part 2, Dr. Ammar Siamwalla gives an excellent overview of the functioning of the Thai economic mechanism and the peculiar problems that this type of mechanism raises for the policy makers in Thailand, particularly in connection with stability, growth and distribution. Some of his provocative views are coincidentally discussed and either confirmed or repudiated by other contributors subsequently in this volume.

Part 3 deals with the financial aspects of the Thai economy. The first section is devoted to the institutional part. Paiboon Wattanasiritham discusses the role of financial institutions. Sa-Ngob Punnarugsa analyses the profitability of commercial banks and proposes some reform on certain aspects of the banking sector. His Thai Farmers Bank colleague, Thep Roongtanapirom indicates the direction in which the Thai commercial banks seem to be heading for in the 1980's. The second section deals exclusively with the policy side. Dr. Warin Wonghanchao uses Theil's theoretical model to evaluate the Bank of Thailand's monetary policy in the 1960's and finds out that such policy, as mapped out by Dr. Puey Ungphakorn and assisted by Khunying Suparb Yossundara, was intentionally or unintentionally quite appropriate and consistent with the maximization of a prescribed social welfare function aimed at achieving income growth and the increase in the purchasing power for foreign goods and services. In the following paper, Sataporn Jinachitra suggests another method of analyzing the movement of money supply and recommends that the manipulation of the monetary base and, perhaps, the money multiplier should be considered as a useful monetary instrument in regulating the money supply in Thailand. The last essay in this section by Dr. Supachai Panitchpakdi explores the relationship between the price level of the international sector and that of the national sector within the general equilibrium framework of the Thai economy, and implies that there will be several problems concerning the use of various policy measures to combat inflation originated from the international sector.

The three essays in Part 4 by Drs. Ammar Siamwalla, Chaiyawat Wibulswadi and Olarn Chaipravat concentrate on the trade aspect as well as the pricing, export and

production structure of Thailand's main staple food and major export—rice. Policy alternatives worth serious considerations are also offered.

The final part stresses both theoretical and practical aspects of economic development. In the first section, Dr. Virabongsa Ramangkura attempts to build a useful macro-econometric model for Thailand. Next, Dr. Phisit Pakkasem's first paper describes the process of development planning and implementation in Thailand, and predicts that the balance of payments situation will continue to be a major constraint to future economic growth. In the following essay, he introduces the polarized growth model and the industrial structure model to emphasize the need for regional planning within a national framework. His colleague at the National Economic and Social Development Board, Chaktip Nitibhon, discusses the problem of urban development and industrial estates. In the second section which concentrates on the process of industrialization in Thailand, Dr. Narongchai Akrasanee evaluates the import substitution and export expansion policies, adopted during the period 1960–1972, in terms of their significance in the industrial growth of Thailand. The last section which is on income and wealth distribution in Thailand by Dr. Udom Kerdpibule is a particularly notable tribute to Khunying Suparb Yossundara since it touches on her other main interest, during the last few years of her life, in rural development to bring forth a more equitable income distribution in Thailand. This last topic is also, at present, of great concern to the Thai society in terms of its political, social and economic significance.

Vast range of subjects are presented here. They are all linked as part of the life and work of Khunying Suparb Yossundara, the most distinguished lady economist Thailand ever produced.

The publication of this volume has been made possible by the generous contribution of Mr. Bancha Lamsam, President, Thai Farmers Bank, a close friend of Khunying Suparb, who personally contributed Baht 65,000 and raised another Baht 40,000 from four other banks. The Siam Commercial Bank contributed Baht 20,000, the Bangkok Metropolitan Bank Baht 10,000, the Bank of Asia and the Union Bank of Bangkok Baht 5,000 each. We acknowledge our deep appreciation to the five banks for their generosity.

All proceeds from the distribution of this book will go to the Khunying Suparb Yossundara Foundation to be used for scholarships and educational purposes.

Prateep Sondysuvan

Department of Economic Research
Bank of Thailand

26 March 1975

BIOGRAPHY
OF
KHUNYING SUPARB YOSSUNDARA

Khunying Suparb Yossundara (Née Raktaprachit) was born in 1920. After completing her secondary school education at Mater Dei Institute, Bangkok, and spending a year and a half at the Arts Faculty of Chulalongkorn University in Bangkok, she won a King's Scholarship for further studies in England in 1938. She was awarded the degree of B. Com. from Birmingham University, England, in July 1942.

During the war, Khunying Suparb, as a member of the Free Thai Movement, worked as translator-announcer on the Thai Language Programme at All India Radio, Delhi.

Khunying Suparb joined the Bank of Thailand in February 1947, first serving in the Exchange Control Division and later transferred to the Research Division in 1948. She became Director of the Department of Economic Research in January 1960. In May 1966 she became Director, Assistant to the Governor, with her main duties covering the fields of international relations and economic policy.

Khunying Suparb was Deputy Manager of the Exchange Equalization Fund between 1956 and 1970; she became Manager in 1970 and held this post up to the time of her death. She was also a member of the National Economic Development Board, a member of the Export Promotion Board, and a Board member of the Faculty of Economics, Thammasat University.

Khunying Suparb played an active part in regional affairs. She was a member of the Committee on Preparatory Arrangements for the Establishment of the Asian Development Bank. She served as a member of the Steering Committee of the Transport Survey of South East Asia, conducted under the auspices of the Asian Development Bank. She also acted as Chairman of the Advisory Committee of the ADB Study of South East Asia in the 1970's.

Khunying Suparb was Executive Director for Burma, Sri Lanka, Laos, Malaysia, Nepal, Singapore and Thailand at the International Bank for Reconstruction and Development from March 1971 to October 1972. Upon her return to Thailand she resumed her duties at the Bank of Thailand.

In November 1973 she was nominated a member of the National Convention and was later elected member of the National Legislative Assembly.

Khunying Suparb married in 1943, in war-torn England, Mr. Prachitr Yossundara who survives her. She also leaves two daughters and two grandsons.

Contributors

<i>Narongchai Akrasanee</i>	Thammasat University
<i>Olarn Chaipravat</i>	Bank of Thailand
<i>Sataporn Jinachitra</i>	Bank of Thailand
<i>Udom Kerdpibule</i>	Kasetsart University
<i>Chaktip Nitibhon</i>	National Economic and Social Development Board
<i>Phisit Pakkasem</i>	National Economic and Social Development Board
<i>Supachai Panitchpakdi</i>	Bank of Thailand
<i>Sa-Ngob Punnarugsa</i>	Thai Farmers Bank
<i>Virabongsa Ramangkura</i>	Chulalongkorn University
<i>Thep Roongtanapirom</i>	Thai Farmers Bank
<i>Ammar Siamwalla</i>	Thammasat University
<i>Puey Ungphakorn</i>	Thammasat University
<i>Paiboon Wattanasiritham</i>	Bank of Thailand
<i>Chaiyawat Wibulswasdi</i>	Bank of Thailand
<i>Warin Wonghanchao</i>	Kasetsart Universtiy

Contents

	Page
<i>Preface</i>	v
<i>Biography of Khunying Suparb Yossundara</i>	vii
<i>Contributors</i>	viii

Part 1 Special Essay

1 <i>Puey Ungphakorn</i>	
Dear Suparb	3
Steps to International Monetary Order	5

Part 2 Overview of the Thai Economy

2 <i>Ammar Siamwalla</i>	
Stability, Growth and Distribution in the Thai Economy	25

Part 3 Finance

Section 1. Institutions

3 <i>Paiboon Wattanasiritham</i>	
Thailand's Financial Institutions: Brief description and a comparative analysis of their roles in mobilizing savings and providing credit	51
4 <i>Sa-Ngob Punnarugsa</i>	
Profitability of Commercial Banks in Thailand	79
5 <i>Thep Roongtanapirom</i>	
Thai Commercial Banking of the 1980's	93

Section 2. Policies

6 <i>Warin Wonghanchao</i>	
An Evaluation of Thailand's Monetary Policy in the 1960's	99
7 <i>Sataporn Jinachitra</i>	
Factors Affecting Changes in Money Supply in Thailand 1964–1973	115
8 <i>Supachai Panitchpakdi</i>	
Inflation: The Case of External Disturbances	123

Part 4 Trade

9	<i>Ammar Siamwalla</i> A History of Rice Price Policies in Thailand	141
10	<i>Chaiyawat Wibulswasdi</i> Thai Rice Exports : An Analysis of Its Performance in the 1960's	167
11	<i>Olarn Chaipravat</i> Aggregate Production Structure of Paddy Cultivation in Thailand: A Time Series Analysis, 1951–1973	191

Part 5 Economic Development

Section 1 Development

12	<i>Virabongsa Ramangkura</i> A Macroeconometric Model for Thailand : A Classical Approach	209
13	<i>Phisit Pakkasem</i> Development Planning and Implementation in Thailand	223
14	<i>Phisit Pakkasem</i> Regional Planning within a National Framework: The Case of Thailand's Northeast	235
15	<i>Chaktip Nitibhon</i> Urban Development and Industrial Estates in Thailand	245

Section 2 Industrialization

16	<i>Narongchai Akrasanee</i> Import Substitution, Export Expansion and Sources of Industrial Growth in Thailand 1960–1972	257
----	--------------------------------------------------------------------------------------------------------------------------------	-----

Section 3. Income Distribution

17	<i>Udom Kerdpibule</i> Distribution of Income and Wealth in Thailand	279
	Subject Index	317
	Map of Thailand	319

Part 1

Special Essay

INTRODUCTION TO
“STEPS TO INTERNATIONAL MONETARY ORDER”
A PAPER SUBMITTED TO THE PER JACOBSSON FOUNDATION MEETING

Tokyo, 11th October 1974

Dear Suparb,

While this paper “Steps to International Monetary Order” was being written, and also while I read and reread the drafts, I could not help thinking of you and missing you. The subject matter is your speciality; and if you were alive, you would certainly be very much involved in this paper.

Nevertheless, you have been really involved, even though indirectly. That this paper has been written at all is due to the good work of two of your young students and assistants. My neglect of the subject of international monetary situation for the past two years and my present preoccupation in freedom and democracy for Thailand have left me quite ignorant and confused in international finance, particularly since recent events in this field have been rather confused.

You will remember that you urged me to accept this task of writing a Per Jacobsson paper; and in your death bed, you were very pleased when I announced my acceptance. I only hope that this paper does not disappoint you.

If I had been freer for time, my contribution to your memorial book would be another paper recounting our experience, yours and mine, during the difficult period 1950–1960, when we were trying, with some success perhaps, to inject order and decency into Thailand’s economic and financial system. This paper still needs to be written, not because of any theoretical insight or academic wisdom that might benefit our younger colleagues, but because the struggle for orderliness, efficiency and decency of our economic system is an incessant struggle in this wicked world of ours. What we could tell our younger colleagues might help them to learn what to do and what not to do; how to do things and how not to do things. And in their struggles at present and in future, our younger colleagues are sure to meet with disappointments, as we have experienced before them. In the depth of the depression caused by failures, these young men and women might be able to learn how to keep their ideals and courage, as you and I, and several other friends, have done in the past. And you will certainly hope that our younger colleagues will always keep to the narrow but straight road of honesty, integrity and courage in public service.

I still hope to find time to write this kind of paper.

In the meantime, you might frown at my present preoccupation in political and constitutional affairs. You once criticised me for concerning myself “too much” with the questions of individual justice, social justice and freedom. There is, you said, no perfect justice in this world. And my reply was that that was precisely why we must redouble our efforts to bring about at least the closest approximation to perfect justice.


Your criticism was of course well-meaning; and you were worried that there were at that time so much calumny and so much invidious gossips about my political

and social leanings. You will have even greater cause for worry in this respect at the present moment.

In my fight for freedom inside and outside the National Legislative Assembly during the past seven months, as to be expected, I have had to contend with much hypocrisy, distortion of facts, and even outright lies. Straight opposition, I welcome; crooked opposition saddens me. Pleas for freedom of conscience have been declared tantamount to cowardice, evasion, immoral, and even treason. Academic freedom has been attacked as dangerous licence. When my friends and I advocate for freedom in political beliefs, we are branded communists ready to destroy monarchy. In the last resort, when our opponents run out of arguments, they play on my Chinese lineage, my Chinese name, even on my wife's lineage.

In writing these lines, I do not intend to complain or to make anybody, least of all, you, feel sorry for me. I just want to congratulate you, Suparb, for the fact that your struggle has now ended. My friends and I are more determined than ever to battle on. Whether you will agree with me on these particular issues of freedom is of little consequence. What is more important is the fact that you and I have always agreed that ideals are worth fighting for regardless.

Peace



*Puey Ungphakorn
22nd August 1974*

1

STEPS TO INTERNATIONAL MONETARY ORDER*

Puey Ungphakorn

It is a great honour and privilege to be given the opportunity to present a paper on a subject of great importance for the world today. In the past few years, we have constantly witnessed a rapid and seemingly unending succession of turbulences and crises of immense proportion in the international monetary system. The Bretton Woods system gradually crumbled down, true to forecast made in the late 1950's, so that we now have a non-system for the conduct of international monetary affairs. Although the present international monetary situation is not as anarchical as in the period before the last World War, there is a clear and urgent need to reconstruct the system to provide a basis for an orderly international monetary conduct in the future.

International efforts for the reconstruction of the present international monetary system began just over two years ago when the International Monetary Fund set up the so-called Committee of Twenty to study and advise on all aspects of international monetary reform. As most of us are aware, in the middle of such a process, uncertainties affecting the world economic outlook, related to inflation, the energy crisis and other unsettled conditions have made it not possible to arrive at reformed measures of a long-term nature. Priority has therefore been given to certain aspects of reform which have become urgent in the interim period. It is expected that it may be quite some time before the situation is adequately stabilized before long-term measures can be agreed and implemented, (if that is at all possible).

Thus I would like to deal with the immediate and long-term aspects separately. I attach great importance to measures needed in the immediate future as we are now faced with many serious problems which may get out of control and lead us to even deeper quagmires.

I. IMMEDIATE STEPS

1. World-wide Inflation and International Monetary System

Ours is a confused economic and financial world. The difficulties are so many and so severe that it is hard to recall a comparable period in recent history. Among the world economic problems, those that are uppermost in the mind of the people—the ordinary people as well as policy makers—are inflation and energy. And in the recent past, the threat of recession has also emerged, adding significant confusion to the already muddled world economic scene.

Global inflation affects all aspects of economic, social and political life of the people. It creates tension, distorts income distribution and undermines the relationship among the various groups of the population. For the poorer areas of the world, it radically undermines the developmental efforts of the nations. Inflation can therefore be rightly seen a corrosive element with deep repercussions on the stability of society. Its impact on society are both extensive and intensive and its cure warrants the most urgent of action. It is worth noting that this is the first time in recent history that a significant

* The author is grateful to Mr. Vijit Supinit and Miss Vijaya Avilasakul of the Bank of Thailand for making this paper at all possible.

number of countries, particularly developed countries, are experiencing inflation in double figures. Its magnitude is unprecedented since it has been rampant in such a degree among almost all major countries.

Inflation has been the main cause contributing to instability and uncertainty in the international monetary system. The break-down of the Bretton Woods system was due to the implication of such a severe inflationary development which, with its disequilibrating effects on the foreign exchange market, makes it not possible for many countries, developed countries in particular, to defend their exchange rates. By necessity, floating has become a noticeable feature of the current exchange system, which is understandable. This necessity however should not be allowed to give rise to claims that the present floating non-system be adopted permanently. If the present rampant inflation were to become an intractable problem among the major countries, the prospects of the recovery of exchange stability would not be very encouraging, to say the least. Since such is the ultimate aim, the international community has an important responsibility to urgently solve the existing problems. The first priority, both in time and importance, is to bring the rate of inflation down to a manageable level. A reformed international monetary system could then see the light of the day, and hopefully its improved features can help prevent the recurrence of this type of problem in the future.

The subject of inflation has indeed been fashionable in the past few years. It is a well-worn topic and a great deal has been said on the subject. In fact, in last year's Per Jacobsson Foundation lecture, as you may recall, Mr. Emminger dealt extensively and elegantly with the subject in relation to the international monetary system and I am sure his statements are still fresh in the mind of many of us. I do not wish therefore to look into this problem in great details. Only some basic aspects will be attended to.

I believe there is a consensus that the responsibility for the emergence of the present bout of inflation rests mainly on the major countries owing to their policies which have placed undue emphasis on domestic requirements with inadequate concern for their external repercussions. The Bretton Woods system has contributed to this situation not only by making it possible for major countries to disregard good economic discipline, thereby letting loose the inflation monster, but also by facilitating the transmission of this inflation to other countries throughout the system. Many countries find it necessary to float their currencies or to resort to more frequent parity adjustment in order to insulate themselves from the effects of spreading inflation. It may be recalled that Mr. Emminger also pointed out that the Bretton Woods system in itself contributed directly to the emergence of inflationary pressure. The unexpected appearance of the energy crisis towards the end of last year helps aggravate the problem and put additional pressure on the international monetary situation. Unless the energy problem too is stabilized in order to provide greater degree of certainty in economic prospects, it would be difficult to see inflation settling down, and the quick recovery of the international monetary stability.

This is not the place to moralise on the behaviour of the leading governments in the world in social and political fields; but social and political actions are closely connected with economic and financial phenomena. The general neglect of agricultural development, and in particular food production, has led to the skyrocketing of the prices of foodgrain and meat. True, the vicissitude of nature has played some part in this state of affairs; but mankind's preoccupation with long wars, medium-term wars and even short wars, everywhere on our globe, have seriously undermined food production and distribution; and it is still doing so. Where production of food has been successful, the

faulty system of subsidy and "harmonized" distribution also succeeds in keeping huge food inventories away from needy consumers. Hence, the phenomena of general scarcity concurrent with the piling up of wrong-priced food-stuff in well-to-do countries: these phenomena are strange but not new. We simply have not begun to learn from past mistakes.

Industrial countries have been struggling with their wage-price problems, which, for political expediencies, are often divided into various phases of action. This is no other than the old unresolved conflict between capital and labour. On the labour side, appeal has been made to the principles of social justice, more equitable income distribution and full employment. On the capital side, it has been claimed that price stabilization and real benefit to the nation cannot be achieved by allowing prices and wages to rise ahead of productivity. Caught between these two worthy sets of arguments, governments would naturally try to mix oil with water in order to please both sides and their own conscience. Instead of tackling the root of the trouble, i.e. the basic national economic structure, which at least would need a drastic fiscal shake-up and social reform, they employ the wrong instruments to restrain galloping inflation: i.e. monetary measures, which have borne a burden incommensurate with their proper functions. As a consequence, we have seen exceedingly tight monetary conditions everywhere and a sharp upsurge to an unprecedented level of interest rates all over the world, causing severe distortion in the monetary condition, especially the structure of interest rates.

Although some reduction in the inflation rate is forecast in the second half of this year and next year since the effect of higher prices for oil and other commodities begins to subside, the rate of inflation is expected to remain high because of a wage-price spiral caused by the struggle of different groups of people to offset large relative price changes and to maintain their real income. And perhaps the price level may not be stabilized after all in view of recent reports of lower-than-expected crop production in the United States and a new spurt in prices of farm commodities. In this environment, there is justification for very cautious and selective policies. There is little ground for optimism however that such a cautious policy approach would be taken. It is also quite clear that the limit of resource availability could not allow the unprecedented rate of economic growth in the past few years to continue much longer without extremely severe price pressures. It is the responsibility of the major countries to the world community to attempt to put their houses in order at the earliest opportunity. Increasing international economic interdependence makes it imperative that the bigger of the developed countries, the U.S. in particular, must take the lead in trying to correct their inflation problems first so that the rest of the world would have the environments conducive to solving their own individual problems. In the present environments, it is almost impossible for any country to isolate itself from the repercussions of external disturbances.

It is therefore inescapable that the major countries must make rigorous efforts in connection with their problems of inflation. And the more these efforts are closely harmonized among countries, the more assured the results are likely to be. In a situation as the present, national actions that support and reinforce each other are needed rather than those individual measures, e.g. exchange rate changes, which cancel out at the international level. Among the least demanding actions could be the organized timing of national stabilization programmes. The initiative of the EEC countries last year in collective economic decision-making to cope with inflation is most welcome. There is a good case for the strengthening and widening of such initiatives which, besides traditional measures, could also cover wage-price control on an extensive scale. This approach

of joint and simultaneous national measures could have powerful international psychological impact on the public's expectation impulses.

The future international monetary system must provide for safeguards that will minimize the possibility of the international monetary system contributing to the spreading and the severity of inflation. To my mind, the future system must be more symmetrical and tight, and less permissive to reserve currency countries. These reserve currency countries should be prevented from continuously financing their balance of payments by accumulating currency liabilities. Even if we succeed in devising such a system, that will not be the end of our trouble regarding inflationary tendencies. This will depend entirely on the economic situation in major countries, most of all the U.S., and their determination to keep on a stable course.

2. Prevailing Widespread Floating and Scope for International Co-operation

The Smithsonian Agreement on the realignment major currencies, including the increase in the official price of gold from US.\$ 35 to 38 per troy ounce of gold, was followed by a brief period of calm in foreign exchange markets. However, the currency realignment did not lead to expected adjustments of balance of payments disquilibria; in fact payments deficits of the U.S. and U.K. continued to deteriorate while the surplus positions of Germany and Japan persisted. Due to balance of payments problems and speculative capital inflow, the pound sterling was allowed to float from mid 1972. Exchange rate uncertainties heightened in January 1973 following Italy's adoption of separate foreign exchange markets, with floating rates for financial transactions, and the floating of the Swiss franc which quickly appreciated. In February 1973, renewed capital movements out of the US. dollar led to the second devaluation of the dollar by 10 per cent and the floating of the Italian lire for commercial transactions as well as the floating of the yen. The system of fixed exchange rates finally broke down in March 1973 when the EEC countries excepting Italy, together with Norway and Sweden, entered into an arrangement for joint floating vis-a-vis the US. dollar, following a revaluation of the Deutsche mark. From March to July 1973, the US. dollar continued to depreciate against the currencies of the other Group of Ten countries and the DM and guilder were again revalued in order to maintain the rates vis-a-vis the other snake currencies within the 2 1/4 per cent band. Realizing that exchange rate movements determined purely by market forces could prove to be erratic and out of line with underlying trends in the balance of payments as well as basic economic objectives, the U.S., Germany, U.K. as well as other EEC countries and Japan began to engage in market interventions. Subsequently, exchange rate fluctuations eased and US. dollar rates appreciated due to improvements in the trade balance. However, exchange rate uncertainties were renewed in early 1974 due to expectations of oil-induced deficits. In January, the French franc left the snake arrangement and floated independently against all other currencies.

In view of rising inflationary expectations and increased balance of payments uncertainties, floating exchange rates are likely to prevail for an indefinite period ahead. A system of general floating appears to be the appropriate course of action under existing circumstances since it enables oil-induced deficit countries to avoid introducing or intensifying trade and payments restrictions for the purpose of defending par values which have ceased to be realistic. By eliminating the obligation to intervene in exchange markets, floating also prevents undue reserve losses or gains and their adverse impact on the domestic economy.

On the surface, recent experience with widespread floating does not appear to have had harmful effects on trade since traders seem to have been capable of adapting to

increased exchange rate uncertainties and both the volume and value of world trade continued to grow in 1972 and 1973. Total value of world trade increased by 17 and 34 per cent while the volume of world trade expanded by 9 and 11 per cent respectively during these two years. However, it should be noted that the average unit value of internationally traded goods rose sharply in 1973 by 21 per cent compared to the average rate of 4 per cent during 1968-1972. This was due partly to the dollar devaluation and partly to the commodity boom arising from hedging and speculative demand. The increase in the volume of trade was concentrated in a group of developed countries. In the case of LDCs, the volume of export and import trade rose by 1 1/2 per cent in 1973 compared to 14 and 5 per cent respectively in 1972. Thus, recent experience with floating cannot be said to have no adverse effects on trade expansion, at least as far as LDCs are concerned.

On the other hand, increased exchange rate uncertainties have contributed to inflationary pressures by increasing the need of private traders and investors to cover themselves against exchange risks and unstable price expectations. Consequently, medium and long-term investment outlays and production plans are affected. The above-mentioned effects of floating apply universally but are generally more keenly felt by the LDCs with limited international reserves and heavy reliance on imported capital goods and investment funds. Exchange rate uncertainties therefore tend to have a severe impact on the development plans and external debt burdens of LDCs.

Floating by the major industrial countries have also affected balance of payments and exchange rate policies of LDCs which are pegged to a floating intervention currency. While some LDCs switched to other intervention currencies, their choice in this matter is rather limited due to traditional links and the pattern of trade. In Thailand's case, the US. dollar has remained the official intervention currency and the Baht has continued to float vis-a-vis the other major currencies.

In sum, the effects of floating should not be assessed on the basis of short-term trends alone. Its impact on economic growth and long-term prospects for world trade should also be considered. While floating is justifiable under present circumstances, early return to a system of more stable but adjustable rates reinforced by an effective adjustment mechanism would be more beneficial to world trade and economic growth.

In the meantime, international co-operation is essential to promote orderly exchange rate developments and to minimize the adverse effects of exchange rate uncertainties on the world economy. It has generally been agreed that current widespread balance of payments problems cannot be solved by competitive depreciations or intensified use of trade and payments restrictions. Towards this end, a voluntary trade pledge is currently being proposed for adoption by Fund members. The Fund has also established a facility for recycling oil funds to countries facing oil-induced deficits although funds to be recycled through the new Oil Facility in 1974 will amount to only about SDR 3 billion compared to the aggregate deficits of oil-importing countries estimated at over SDR 60 billion in 1974. While the major industrial countries and credit worthy LDCs should have no difficulty in raising loans in the money markets, terms are likely to be hard and competition stiff. In order to prevent market disruptions, deficit countries should find some means of co-ordinating both the timing and the terms of borrowings in the money markets. In this connection, it has been suggested that the Bank for International Settlements could play a useful role. Adequate financing for countries which do not have access to the money markets should also be provided.

In order to prevent competitive downward floating and to promote orderly exchange rate developments, the Fund has adopted a set of guidelines for the management of floating in accordance with the provision that members "collaborate with the Fund to promote exchange stability, to maintain orderly exchange arrangements and to avoid competitive exchange alterations". Under guidelines 1-2, members are allowed to intervene in the exchange markets to smooth out day-to-day fluctuations as well as fluctuations from medium-term trends. While "aggressive intervention" i.e. to depress value of currency when it is falling or to enhance that value when it is rising, is normally prohibited, members are allowed or may be encouraged to intervene aggressively (guideline 3) in order to bring exchange rates closer to "target zones" which have been set in consultation with, or at the initiative of, the Fund. Under guideline 4, the Fund may also initiate consultation regarding medium-term reserve aims of individual member countries consistent with global trends and needs, and may encourage members to intervene more strongly so as to induce reserve movements closer to agreed aims. Under guidelines 5 and 6, countries with floating currencies are expected to refrain from imposing trade and exchange restrictions for balance of payments purposes and to consider the interests of other members, particularly the issuer of the currency used in intervention.

The above guidelines should help to prevent wide fluctuations in exchange rates and promote broadly consistent exchange rate policies and balance of payments aims. However, the effectiveness and adequacy of these guidelines remain uncertain as they are not legally binding, the reason being that floating has not been legalized by the Fund. When the Fund's Articles of Agreement have been amended to allow the Fund to authorize floating in particular circumstances, international surveillance of floating could be made more effective by requiring members with floating to apply for prior Fund approval and to observe conditions and rules laid down by the Fund. For instance, regular consultation with the Fund might be required to ascertain the need to maintain floating rates and time limits for floating could be set. The present diluted version of rules for intervention could also be strengthened by requiring Fund members to intervene to smooth out exchange rate fluctuations and to apply for prior Fund approval before resorting to "aggressive intervention". In regard to target zones for equilibrium exchange rates and reserve aims of individual countries, the technique for their determination as well as the procedure for their application have yet to be laid down. The Fund should avoid using target zones and reserve aims as automatic indicators to trigger exchange rate changes and should maintain a flexible approach in this matter. Finally, the choice of intervention policies other than smoothing operations should, as far as possible, rest with individual countries.

In sum, floating should be legalized and more effectively controlled by the Fund to prevent disorderly exchange rate developments and unfair intervention policies aimed at strengthening the trade balance at the expense of other countries. More effective international management of floating would be a step towards an eventual return to a system of stable but adjustable exchange rates.

3. Recent Development and Interim Arrangements for Global Liquidity

The volume of international reserves which has grown at a fairly constant rate of about 2 per cent per annum from 1954 to 1969 rose sharply at the rate of 22 per cent, 32 per cent and 19 per cent respectively in 1970, 1971 and 1972. Total international reserves at the end of 1972 stood at SDR 144 billion compared to SDR 76 billion in 1969. This increase was almost entirely due to the increase in official foreign exchange

holdings which tripled during these three years. In 1973, global reserves rose by 15 per cent to SDR 152 billion due to the increase in official gold price and revaluation of some major currencies.

The composition of reserve as shown from 1973 data was as follows: foreign exchange holdings 66 per cent, gold 24 per cent, SDR 6 per cent and reserve positions in the Fund 4 per cent.

The pattern of reserve distribution has favoured the industrial countries whose total holdings amounted to 67 per cent to world reserves. Reserve holdings of LDCs totalled SDR 37 billion in 1973 of which about 1/3 represented reserves of oil-producing countries. If the latter's reserves are excluded, reserves of LDC would account for only 13 per cent of total reserves. The oil crisis which occurred at the end of 1973 is expected to alter the pattern of reserve distribution substantially during the next few years, with most of the traditionally surplus industrial countries facing substantial reserve losses along with LDCs which are net importers of oil.

Assessments of reserve needs have normally been based on import requirements and money supply as well as evidences of balance of payments and reserve policies e.g. use of trade and exchange restrictions, domestic demand management, use of balance of payments credits and aid flows. On this basis, and on expectations of normal rate of trade growth, global liquidity was estimated to exceed global reserve needs by about SDR 20—30 billion in 1972 and the IMF decided against further SDR allocation in 1973 and 1974.

The existence of liquidity excess on a global basis did not allow for liquidity shortages on the individual country basis due to the concentrated and skewed pattern of distribution. Moreover, too much weight has been given to past trends of trade growth and reserve needs; too little consideration to growth targets and long-term reserve aims.

The occurrence of the oil crises in 1973 not only altered the reserve distribution pattern it also reduced the urgency of the problem of huge currency "overhang". The industrial countries which had accumulated huge dollar reserves which were officially inconvertible no longer pressed for substitution or funding arrangements for the overhang as the oil-exporting countries were content with market convertibility of foreign exchange holdings. While the problem of immediate concern is the recycling of oil funds to oil-deficit countries, urgent attention should be paid to the destabilizing effects of the liquid and extremely volatile foreign exchange holding of oil exporting countries on the international monetary system. Towards this end, arrangements should be made to stabilize the Euromoney market and bilateral funding arrangements concluded between the issuer countries and the oil-exporting countries. At the same time, the Fund should initiate a "substitution facility" whereby reserve currency holdings could be converted into SDR. This facility should operate on a voluntary basis.

In view of the present liquidity shortage experienced by oil-importing countries, urgent attention should be given to the problem of making gold generally usable. In this connection, the Group of Ten agreed to use gold at the market price as collateral for Central Banks' borrowings since June this year. As this arrangement is inconsistent with existing Fund provisions for official gold transactions at par, the following alternatives have been suggested for dealing with the gold problem.

(1) maintain the official gold price and allow monetary authorities to sell gold in the market,

(2) abolish the official gold price, allow monetary authorities to sell gold among themselves and sell to the Fund at market related prices and to sell, but not to buy, gold in the market,

(3) as in (2) above but allow monetary authorities to buy gold in the market also,

(4) establish a gold substitution account in the Fund for conversion of gold reserves into SDR at market related prices and authorize the Fund to sell gold in the market from time to time.

A direct increase in the official gold price is generally not regarded as an acceptable solution since it would directly conflict with the long-term objective of demonetizing gold by increasing expectations for further price rises. An increase in the official gold price would also result in liquidity increase which would be unevenly distributed and is also likely to jeopardize future SDR allocations.

Any arrangement for gold should not only ensure more efficient management of global liquidity by increasing the role of internationally managed reserve asset such as SDR, but should also promote fair distribution of gains between those countries which have accumulated gold and those which have observed the Fund's ruling against accumulating gold at the market prices. One means of ensuring fair distribution of gains would be through international management of gold sales and the transfer of profits to development finance institutions.

In order to enlarge the role of SDR as the main primary reserve asset and to promote substitution of reserve currencies and gold into SDR, the attractiveness of the SDR should be increased by guaranteeing its capital value and by increasing the yield on SDR holding. An adequate rate of "effective yield" should make SDR as attractive to hold as other reserve assets but not so attractive as to make SDR holders unwilling to part with these reserve assets.

Towards this end, the method for SDR valuation for purposes of official transactions was changed from the use of the par value of SDR (in terms of US. \$) and market rates between the US. dollar and other currencies to the "standard basket" approach. Under the new method, the value of the SDR is equivalent to the sum of 16 currency components weighted according to their relative shares in world trade. The weight of the US. dollar is however fixed at 33 per cent to allow for its role as the principal reserve currency. The value of SDR in terms of the US. dollar is then determined by converting the various currency components in the basket into US. dollars at market rates. The rate of US. dollar per one unit of SDR thus derived is used for computing the value of SDR in terms of other currencies by applying the prevailing market rates between the US. dollar and the currency desired.

Under this method of valuation, the value of SDR in term of currencies will vary constantly i.e. increasing in term of the depreciating currency and decreasing in terms of other currencies. When currencies are generally appreciating, the value of SDR in term of currencies in general will decline. In times of general depreciation however, the value of SDR will appreciate. Thus, assuming that currency appreciations and depreciations are balanced over a period of time, the value of SDR in terms of currencies should remain fairly constant.

This method of valuation ensures that the value of SDR will reflect the effective relationship between currencies instead of linking SDR value to the par value of the US. dollar when market rates of the major currencies are in fact floating freely

against the US. dollar. Thus members using SDR should get more value for each unit of SDR than the previous method whereby currency values were tied to an over-valued dollar.

The basket approach should make the SDR more widely usable since its goldlike character will henceforth be merely a formality and transaction prices in terms of currencies will be computed from market rates. The reluctance to use SDR in times of uncertainties regarding the gold price should therefore be eliminated.

The SDR will however be more attractive than reserve currency holdings under the new method of valuation since exchange risks will be spread out over 16 currencies. Moreover, changes in currency value will correspond to the relative weight of that currency. On balance, SDR holdings will be more secure than holdings of any one currency.

In addition to the change in the valuation method, the rate of interest on SDR holdings has also been increased from 1 1/2 to 5 per cent per annum. In the future, this rate will be reviewed at frequent intervals and changes will reflect average short-term interest rates in 5 major industrial countries (U.S., U.K., Germany, France and Japan).

The combined effect of stable capital value and higher interest rate should make the SDR more widely acceptable and usable in official transactions. This should ensure more efficient management of international reserves and prevent destabilizing shifts between various forms of reserve assets.

4. The Eurodollar Market

Since its emergence in the 1950's, the Eurodollar market has enjoyed a record of remarkable growth. Development of the Eurodollar market has been encouraged by the relative freedom from restrictions which apply to other types of transactions as well as the competitiveness of its interest rates relative to rates in national money markets. The convenience and anonymity offered by the market have also contributed to its popularity among banks and other institutions in the U.S. as well as in other countries. The structure of the market has undergone a rapid transformation involving a decline in the US. dollar component which has always made up the bulk of Eurodollar transactions, and a change in the geographical pattern of lending and borrowing through the market. In 1969, U.S. residents were the main net users while the main net supplier was the reporting European area. By the end of 1973, the main user on the market was Japan followed by the U.S. while the main net supplier was the Middle East. Loans to developing countries, mostly on a rollover basis, more than doubled in value last year, while borrowing by developed countries, made in anticipation of balances of payments difficulties, increased substantially in the wake of the recent shifts in terms of trade due to increases in the price of oil.

The recent spectacular development of the Eurocurrency market has been contrary to general expectation. In view of the U.S. being able to reduce its balance of payments deficits it was widely expected that the reflow of liquid funds to the U.S. would dry up much of the resources of the Eurodollar market, and its development would be moderated. Other factors which have been, and are expected to continue, operating in the direction of reducing the rate of growth of the Eurodollar market and encouraging deposits in local currency markets rather than with banks in the Eurocurrency market are: the removal of U.S. capital controls, the decreasing differential between interest rates in the Eurocurrency market and local money markets, and the possibility of controls

being imposed on the market by governments of countries in which the banks are situated, possibly making it difficult for depositors to withdraw funds from the market at will.

In its role as an intermediary for international financial transactions, the Eurodollar market has promoted the efficient allocation of financial resources and has encouraged, through the influence of its interest rates on that of different countries, a certain degree of homogeneity of monetary policy. By facilitating international loan transactions, it has played an important role in encouraging the expansion of international trade. More recently, funds have been channelled through the Eurodollar market to the developing countries and used for developmental purposes.

In spite of the valuable services the Eurodollar market is recognised to have performed, its scope and intricate mechanism are far from being generally understood in depth. A number of problems may be mentioned in relation to the Eurodollar market. It is often contended that the Eurodollar market is a major force contributing to the present state of inflation due to the fact that banks in the Eurodollar market create credit by expanding loans in the same manner that banks in a domestic banking system create deposits up to the limits of required reserves. In this way the global supply of money is said to be increased. However, it should be noted that Eurodollar deposits are not a direct means of payment but must be converted to a bank deposit in the US. Furthermore, the major portion of funds in the market is held in the form of term deposits rather than at call and therefore cannot be considered as part of the money supply in the same manner as demand deposits of nationally operating commercial banks. While there is no consensus of opinion whether deposits in the Eurodollar market can indeed initiate a process of money creation, it has been recognised that total liquidity is in fact increased by central bank deposits in the market since when a central bank deposits money in the market, total liquidity in the domestic market is not correspondingly decreased which is what occurs with deposits by private institutions, while liquidity in the recipient country is increased. The central banks from which the funds originated still hold in their reserves the balances they have deposited in the market, while the central banks of the recipient countries also show in their reserves the new balances which have come into their hands. Hence global liquidity is increased.

In an attempt to prevent this effect from causing inflation, the Group of Ten in 1971 agreed not to increase their official placements in the Eurocurrency market and a limitation on the placement of official reserves by all IMF members is being examined. There is no real reason why central banks should object to this proposal since traditionally, before the emergence of the Eurocurrency market, banks have always deposited their reserves in the countries in whose currencies their reserves are held. The interest rate advantage of the Eurocurrency market has now been diminished due to high interest rates in the national money markets, and depositors are already turning to national money markets to place their funds. The advantage left is that of convenience, for if major countries re-establish or maintain controls on the inflow of capital similar to those which existed during the greater part of 1973, it would be very difficult or very unprofitable for central banks to deposit in such countries. As this would in effect encourage deposits in the Eurocurrency market once again, it is important that such controls be discouraged.

Critics of the Eurodollar system often point out that due to the fact that banks in the Eurodollar market operate under relatively few controls over their activities, they can sometimes give rise to flows of funds of substantial size which can undermine national economic policies. Furthermore, they contribute to destabilizing capital movements

by being a source of speculative funds connected with flights of funds out of weak currencies and rushes into strong currencies. This is said to have been most pronounced during the first few months of 1974 when the Eurobanks' liabilities to US residents increased by about \$ 2 billion. The opposing view is that most deposits in the Eurodollar market are term deposits and cannot be immediately withdrawn in response to interest rate or exchange rate advantages so that their exact role in promoting instability is debatable. In any case, these movements of capital have not been the cause of instabilities of the monetary system but rather the consequence of lack of confidence arising from more basic disequilibrium, coupled with an inadequate adjustment mechanism. To prevent the potential damage caused by flows of capital via the Eurocurrency market, a prompt adjustment process is therefore desirable. In an attempt to minimize destabilizing capital flows, capital controls may be necessary in some cases though it is generally recognised that, ordinarily, capital flows should be as free as possible. Controls on capital flows should be used only as a temporary measure and should not inhibit flows for investment or developmental purposes. Though controls on capital flows are not by themselves desirable, they are preferable to controls on trade.

More recently, the instability of the Eurodollar market caused by the changing pattern of supply and demand of fund in the wake of the recent oil crisis has become a matter of increasing concern. Increased demand for fund by countries suffering balance of payments problems, and by developing countries suffering a declining supply of economic assistance regularly forthcoming from industrial countries, together with high interest rates prevailing in domestic money markets due to the universal pursuit of contractionary monetary policies has caused interest rates in the Eurocurrency markets to soar to unprecedented heights. For instance, a record 14 per cent for the three-month Eurodollar was achieved in early-July. A greater part of the current demand for funds in the Eurocurrency market is for medium or long-term finance, while a greater part of the supply is very short-term. Most notably, "petrodollars" are placed in very short-term deposits for maximum manoeuvrability due to the prevailing climate of uncertainty and distrust in the foreign exchange markets. In fact, many banks have experienced serious losses due to their foreign exchange commitments. Consequently, banks are finding it necessary to finance long-term loans with short-term deposits and this has resulted in fear that if maturing funds fail to be redeposited, banks may be unable to meet their obligations and a moratorium will have to be declared. This fear has accentuated the problem by increasing the desire of customers for shorter rather than longer-term deposits. Further complicating the matter is the possibility that banks may find their lending growth inhibited by the inability to take on additional deposits due to their rapidly declining capital/deposits ratio.

Due to the lack of confidence in the Eurocurrency market, holders of fund are turning towards national money markets in Europe and the United States instead of the Eurocurrency market. This tendency has been more pronounced recently due to the decline in the interest rate advantage which once existed in the Eurocurrency market. The possibility of controls being devised to limit the operations of banks in the market has raised fears of increasing difficulty in withdrawing funds from the market and has reinforced the preference for short-term deposits.

These problems have resulted in increased concern over the stability of the institutions within the Eurodollar market and measures are being considered with a view to improving the security of the market.

For instance, major Western countries have reportedly reached an informal agreement to protect the Eurocurrency market against collapse by providing support to a major bank with substantial Eurocurrency exposure, and which is facing liquidity problems that could lead to a major failure, to a certain extent of their regular swap lines. They are therefore acting as lenders of last resort in a limited way. Though this role of central banks is important in building up confidence in the banks, the problem remains as to which country should have the final responsibility over any particular bank, and the extent of authority they should have over the operation of the bank, in order to enforce rules for orderly and prudent conduct of banking business. Controls worth considering are direct limits on total Eurocurrency liabilities or lending, or reserve requirements on liabilities or lending. These controls will limit the expansion of banks' Eurocurrency business but will also cause a reduction in the exposure of the banks, promoting a healthier investment climate. Through reducing Eurocurrency transactions, it may also be argued that controls on Eurocurrency activity will cause global liquidity to be reduced, relieving inflationary pressures created by the Eurocurrency market, if in fact they do exist. On the other hand, with a reduction in the supply of credit, it would become increasingly difficult to take out loans for balances of payments or for developmental needs, and could increase the cost of any loans obtainable.

In recognition of the importance of the Eurodollar market's contributions to the growth of the international economy, care must therefore be taken not to make credit so expensive or constraints so overpowering that it would impair the market's function as an efficient medium for the allocation of credit on a world-wide scale. As an important source of capital and outlet for investment, the continued existence of the market is desirable, particularly for developing countries. Studies of the nature and implications of the market should therefore be made with a view to introducing long-term measures to improve the security of the market without considerably affecting its efficiency and costs elements. Increased confidence in the market is particularly urgent in order to recycle money from the oil producing nations to oil importing nations which are suffering substantial balance of payments deficits. In the event that the Eurodollar market is greatly restricted in the future by international agreements and as a result of consolidation of currency overhangs, alternative sources of funds must be found for the developing countries.

II. LONG-TERM OBJECTIVES OF MONETARY REFORM

International monetary problems discussed in Part I of this paper demand immediate and concerted action to ensure that international trade and investments are not disrupted by the general abandonment of par value obligations and the breakdown of the gold-exchange standard. Towards this end, some steps have already been taken. The IMF has adopted a new standard of value, the SDR, whose value is linked to a basket of currencies at the current market rates, for transactions with member countries involving SDRs as well as currencies which are floating. Guidelines for Fund management of floating exchange rates have also been established. In order to provide a more effective forum for international consultation on monetary issues of mutual concern, the structure of the IMF will be streamlined by increasing the functions of the Executive Board and establishing an Interim Committee of the Board of Governors. This Interim Committee consisting of high-level representatives of the constituencies which are entitled to appoint or elect an Executive Director will be of the same size as the now defunct Committee of Twenty (160 participants). It will advise the Board of Governors on the

need for adjustment of imbalances, the appropriateness of exchange rates and payments policies, as well as act as a forum for international co-operation in dealing with monetary crises and the future of the international monetary system. It is expected that the Interim Committee will be replaced in due course by a permanent Council of Governors with decision-making power.

These interim arrangements should adequately meet present needs of the world community. However, uncertainties in regard to exchange rate flexibility, the usability and value of gold and foreign currency holdings and the criteria for balance of payments adjustment will persist with adverse consequence on the long-term prospects for international trade and economic growth in the following ways. Fluctuations of exchange rates, which serve the function of translating international prices into domestic prices, will generate price instability and accelerate inflation rates, thereby eroding confidence in money. Failure to agree on the value and usability of reserve assets will affect the need for balance of payments financing and encourage destabilizing shifts between various forms of reserve assets. Finally, and perhaps the most important shortcoming of this present non-system, the lack of an adequate adjustment mechanism, the root cause of past monetary crises which led to the break-down of the Bretton Woods system. While the Fund will begin to play a more active role in promoting prompt and adequate adjustment of imbalances, there has been no agreement on the criteria to be used in determining the need for adjustment and the forms and degrees of sanctions to give more "bite" to the adjustment mechanism. This can be expected to reduce the effectiveness of Fund surveillance.

Another aspect of international economic relations which remains to be rectified is the transfer of real resources to LDCs. While it is generally recognized that the welfare of LDCs is of vital concern to world peace and stability, very little has been done to translate this principle into concrete action.

In sum, long-term monetary issues which should be dealt with are as follows: the exchange rate system, the adjustment mechanism, improved management of global liquidity, convertibility and intervention practices and the special interests of LDCs.

I cannot venture to predict how long the present upheavals in the payments positions and prospects will last. This may take 2-3 years. But for all we know monetary conditions may take as long as a decade to stabilize. To prepare for any eventuality, negotiations on the features of the system which will replace Bretton Woods should be resumed by the Council of Governors. The findings of the Committee of Twenty should be used as the starting point, adding to the "skeleton" of the reformed system the necessary technical points and operational details. These long-term issues need not be tackled in one package since the degree of urgency varies from case to case. Priority should be given to improvement of the adjustment mechanism, management of global liquidity and special interests of LDCs. Agreement on the exchange rate system, convertibility and intervention practices could be postponed until conditions become more stable. The evolutionary and piecemeal approach to international monetary reform may not result in an ideal system. However, this approach will ensure that solutions to long-term monetary problems will be acceptable and practicable.

I shall now proceed to discuss each of the basic objectives of reform separately.

1. The Adjustment Mechanism

In order to ensure smooth functioning of the international monetary system, both surplus and deficit countries should be obliged to undertake prompt and adequate

adjustment measures. The basis for determining the need for adjustment in both cases would be

- either 1) a disproportionate movement of reserves
- or 2) Fund judgment based on assessment of all the relevant factors.

The point of contention arises in connection with the degree of automaticity in the use of the reserve indicator to determine the need for adjustment. The automatic reserve indicator system would avoid the possibility of conflicting interpretations of the criteria for adjustment. On the other hand, the reserve indicator may conflict with other signals in the economy and can often be manipulated. Both the "stock" approach and the "flow" approach to the reserve indicator system would be open to the objection that they fail to take into account the differences in the nature and degree of reserve needs of individual countries. In the case of LDCs reserve norms have to be set at a higher level to allow for fluctuations in export earnings as well as development aims. Upper and lower "warning points" above or below reserve norms and limits on primary asset holdings which may be established for the purpose of assessing the need for adjustment should therefore differ for various groups of countries i.e. advanced countries, LDCs and oil-exporting countries. Above all, reserve indicators should not create a presumption for adjustment and should not trigger the application of pressures. A careful assessment of all the relevant economic factors should be the basis for Fund surveillance of the adjustment process. Choice of adjustment measures i.e. exchange rate changes, monetary or fiscal measures, should be determined by national authority although their appropriateness and adequacy will be reviewed by the Fund.

Regarding the form and degree of pressure to be applied to countries failing to adjust, it appears that deficit countries will be subject to more effective and severe pressures than surplus countries. For instance, denial of access to Fund credit facilities, penalty interest rates, publication of Fund report on the economic position and prospects and authorization of discriminatory use of trade and exchange restrictions are more likely to aggravate the position of deficit countries than surplus countries. In order to ensure greater symmetry in adjustment obligations, more effective forms of pressures should be applied to surplus countries and deficit developed countries. In this connection, the Fund's "scarce currency" clause should be applied more readily than in the past.

The need to improve management of reserve currency holdings has already been discussed in connection with the Euro-money market and arrangements for reserves accumulated by oil-exporting countries. Possible arrangements for gold have also been examined. Suggestions for substitution of reserve currencies and gold for SDR and for periodic sale of gold in the market are in line with the long-term objective of enlarging the role of internationally-managed reserve asset i.e. the SDR. In the long-run, the SDR should become the centre of the international monetary system, replacing the gold-exchange standard.

Towards this end, the value of SDR should be more stable than currency holdings. This could be achieved by increasing the value of SDR at a given rate per annum i.e. increasing the number of currency units in the basket under the modified "standard basket" approach. Alternatively, the "asymmetrical basket" approach could be adopted whereby the number of units of the currency which has devalued as floated downward will be increased in proportion to exchange rate changes. This approach will prevent the value of SDR from declining in terms of non-depreciating currencies while

a revaluation or upward float will continue to raise the value of SDR in terms of other currencies. Both approaches will ensure that the capital value of SDR increase over time and will make it an internationally preferred reserve asset. A stronger SDR would however imply lower interest rates on SDR holdings to prevent hoarding. Finally, existing rules for use and holding of SDR should be amended to improve the reserve asset nature of the SDR and to reduce its role as short-term balance of payments credits. In this respect, reconstitution provisions and acceptance limits for SDR should be abolished. The possibility of promoting general understanding and use of SDR by the private sector should also be explored.

In regard to official holdings of foreign currencies, the conflict between the desire of individual countries to retain the freedom in determining the composition of their reserves on the one hand, and the general recognition of the need for more effective control of global liquidity increases and destabilizing shifts between the various forms of reserve assets on the other, should be resolved. The existing currency "overhang" not only creates the problem of uneven reserve distribution but also defeats the aim of improving the adjustment mechanism. We are sympathetic to the needs of monetary authorities to choose the composition of their reserves according to their income-earning objectives and the need to maintain adequate working balances to ensure access to the money markets. However, the principle of improved management of liquidity should prevail. Under the reformed system, countries should avoid sudden changes in the composition of their reserves and should aim to reduce foreign currency holdings over time. The Fund should be authorized to issue SDR for substitution of reserve currencies presented by official holders and should be able to designate members to substitute reserve currencies for SDR when necessary.

Under the reformed system, the volume of global reserves should be managed by means of SDR allocations so as to prevent inflation as well as deflation. To allow for shifts from private holdings of currencies to official holdings, a sufficient degree of elasticity will have to be provided either by means of limits on primary reserve holdings (beyond which countries would not be entitled to convert foreign currency holdings into gold or SDR) or by allowing for exemptions of obligations on asset settlement as discussed below.

3. Special Interests of LDCs

The reformed system should provide for LDCs to be exempted from adjustment obligations and the application of pressures due to the special characteristics and needs of these countries. The special needs of the LDCs should also be recognized in regard to reserve norms. The reformed system should also ensure that the transfer of real resources to LDCs will increase steadily in proportion to their growth objectives.

The principle of resource transfer is justified by the fact that LDCs have always been at the losing end throughout the recent international monetary upheavals arising from factors beyond their control. This is seen clearly in the case of exchange rate uncertainties. Price instability resulting from exchange rate uncertainties and inflation has not only disrupted development plans of LDC but also domestic production, income and employment. Exchange rate flexibility is likely to remain a permanent feature of the international monetary system. In addition, the LDCs will be subject to more control in regard to reserve management, convertibility and adjustment in spite of the fact that their conduct in these matters will not have substantial impact on the rest of the world. To offset these adverse effects, concrete measures should be adopted to ensure increased transfer of real resources to LDC.

In this connection, the proposal to link SDR allocation to development finance either by direct SDR allocation to LDCs or indirectly through development finance institutions should be implemented as soon as possible. The establishment of a "Link" will ensure that the benefits hitherto enjoyed exclusively by major countries whose currencies are held by other countries as reserves will now be enjoyed by LDCs. The "Link" should not however accelerate world inflation and SDR creation should continue to be based on careful assessment of global reserve needs alone. Technical problems seem not to exist, what is lacking is political support and commitment.

The Fund should also endeavour to improve existing credit facilities particularly the Compensatory Financing Facility and Buffer Stock Facility aimed at stabilizing prices of primary products. Longer-term balance of payments support should also be considered by the Fund in addition to the "Link" under the proposed Extended Fund Facility.

Other aspects of the transfer of real resources to LDCs—i.e. improved quality of aid, higher targets for official aid, access to capital market and external debt relief measures have been recognized as desirable objectives of monetary reform. However, a machinery for overseeing work in this area has been lacking. The Committee of Twenty's proposal to set up a joint Ministerial Committee of the IMF and the World Bank to study this matter is therefore very welcome.

In view of the pressing needs of LDCs, the proposed "Link" as well as other aspects of resource transfers should be implemented as soon as practicable.

4. Exchange-rate System

I have already indicated my preference for a system of stable exchange rates. To be more specific, this would imply a return to fixed but adjustable parities, with floating in special cases when approved by the IMF. Thus, under the reformed system, countries should be obliged to maintain exchange rates within agreed margins. At present, the Fund allows rates to fluctuate within margins of $2\frac{1}{4}$ per cent above or below the par value in terms of SDR. This means $4\frac{1}{2}$ per cent margins above or below the parity relationship between any two currencies derived from the ratio between their par values in terms of SDR. Exchange rates of any currencies could therefore be as much as 9 per cent apart. Under the reformed system, wider margins than prevailing at present should not be accepted. Proposals for simplified procedures for Fund approval of small and frequent changes in par values as well as managed floating rates would likewise not be in the interest of the world community. It is conceivable that there could be very little difference in the degree of exchange rate flexibility under the 1) stable but adjustable rates system with floating in particular cases 2) fixed rates system with simplified procedures for Fund approval of small and frequent par value changes and 3) a system of managed floating. However, in terms of psychological effects and the effectiveness of international surveillance, the first alternative appears to be more beneficial to long-term prospects of trade and economic growth.

5. Convertibility

Another basic feature of the reformed system should be the resumption of convertibility obligations. This means that all countries would be obliged to settle in primary assets all official currency holdings presented for conversion. For countries whose currencies are not used for trading and reserve purposes, convertibility obligation would be observed by official intervention to maintain exchange rates within agreed margins.

The reformed system should therefore ensure that all countries whose currencies are held as official reserves would reduce their currency liabilities to the full extent of their balance of payment deficits. This could be done by bilateral conversion or through the Fund based on changes in total currency liabilities to official holders. Countries in surplus should however have the option to convert reserve currency holding provided that accumulations beyond appropriate limits would be subject to Fund designation for substitution into SDR. This mechanism would ensure that deficit countries will not be able to finance their imbalances by increasing currency liabilities while surplus countries will enjoy a degree of freedom in reserve management policies. To ensure an adequate degree of elasticity, limits of primary asset holdings or exemptions of reserve currency countries from settlement obligations would also have to be provided.

6. *Intervention Practices*

Under the reformed system, all countries should be obliged to intervene to maintain their exchange rates within agreed margins. The same degree of exchange rate flexibility within these margins should be available to all countries. Towards this end, it has been suggested that countries whose currencies are widely traded should undertake to maintain exchange rates vis-a-vis each other's currency within a band of 4½ per cent based on parity relationships under the multi-currency intervention system. Other countries will maintain rates within the same margins vis-a-vis their intervention currency or currencies which could normally be the currencies of countries participating in the multi-currency intervention scheme. This would ensure that any pair of currencies would not be more than 9 per cent apart. Alternatively, the SDR has been suggested as the intervention medium. However, this would conflict with the use of the "basket" approach for SDR valuation since SDR used for intervention will be transacted at agreed margins above or below the par value. This approach would also involve private use of SDR which may take time to develop. The multi-currency intervention system appears to be more feasible in the foreseeable future.

In regard to intervention practices, it is hoped that currencies which are tied to a major currency will continue to have the same degree of flexibility vis-a-vis their intervention currency regardless of where their intervention currency stands.

* * * * *

Editors note: In his oral presentation, Dr. Puey Ungphakorn added some further remarks as follows:

"...I believe, in my written presentation I have given adequate reasons for the various proposals. I am not going to repeat them here, in order to save time.

Before I sit down, may I make a few further remarks?

First, if mankind was not too much preoccupied with wars and the production of arms, perhaps we could devote more resources to the production and distribution of food and the prices of food need not have inflated so much.

Secondly, the problems of wages vs. prices, or cost-push inflation need to be attacked at the root by drastic social and fiscal reforms, instead of monetary measures. This is true of less developed countries as well as industrial developed countries.

Thirdly, it is unrealistic as well as unnecessary to expect the prices of mineral oil to climb down before international monetary reform. What we, oil-importing countries, need is the assurance of a stable price trend which will enable us to have a clearer idea of the payments and inflationary problems ahead of time.

Fourthly, I notice that in the past, discussions on international monetary problems took unduly long time, and in many instances, they have been overtaken by new events. Whenever there was a lull between crises, there was also a lull in the discussions in favour of status quo, until the next crisis compelled decisions to be taken quickly under pressure. The reports were usually very polite, which is perhaps a good thing. But they have rarely been concrete or specific enough, which is not so good. perhaps specific reference or warning to culprits is taboo in international financial diplomacy. Is it too much to expect from now on freer and franker discussions leading to more timely and more effective international monetary reform?

Lastly, in this unequal world, LDCs and DCs are subject to asymmetrical treatment. LDCs need development aid from the World Bank, and in order to obtain such aid, they have to belong to the IMF and behave according to IMF rules. It would be very sinful for them to resort to multiple currency practices in case of necessity, e.g., if they want gradual, instead of abrupt, rises in the domestic price of oil. On the other hand major countries can resort to all sorts of tricks, which are admittedly illegal. Proposals have now been made that such illegal practices should be legalised by amending rules to suit circumstances. "Independent national monetary policy" of the developed countries must be allowed for; that of LDCs could be ignored. In such a world, has one any right to expect international democratic monetary order?"

Part 2

Overview of the Thai Economy

2

STABILITY, GROWTH AND DISTRIBUTION IN THE THAI ECONOMY*

Ammar Siamwalla

INTRODUCTION

My assignment in this seminar is both easy and difficult. I am supposed to present to you a view of some important aspects of the Thai economy, what aspects are left to my discretion or perhaps better, to my imagination. Since I am addressing a group of central bankers, I feel that it would be most profitable if I were to confine my remarks to those topics which would be of most interest to central bankers. Since the subject which would most interest central bankers is the macro-economic stability of the economy in the short run, I shall begin with an overview of the functioning of the Thai economic mechanism and the peculiar problems that this type of mechanism raises for the policy makers in Thailand. This is the subject of Chapter 1. Chapter 2 then examines the long-run growth performance of the Thai economy, and tries to assess the end-results of the developmental efforts of the period since the Second World War. This assessment will raise issues concerning some distributional aspects of the Thai economy and this will be the subject of the closing Chapter 3.

I. STABILITY

A. Some Characteristics Affecting Stability in the Thai Economy

In order to understand well the problems of short-run control of the Thai economy, the following key features must be borne in mind.

Feature One: Thailand is an open economy. Whilst the figure for the proportion of exports of goods and services in gross domestic expenditure is about 20% and the proportion of imports slightly more, the importance of foreign trade in the Thai economy is certainly much more than this. For example, the main export item from Thailand is rice. Yet what we export to the rest of the world is only about 15–20% of our total production of that commodity. The local price for the commodity including the part which is domestically consumed is very much dependent on the foreign price level. Thus the impact of foreign trade on our economy extends not only over the goods that actually enter into world trade, but the remaining portion that remains within the economy as well. Two other features concerning foreign trade should also be noted: the first is the fact that for reasons that will be gone into in Chapter 2, the exchange rate for the Baht has been pegged somewhat on the low side, so that balance of payments problems have been much less of a constant nightmare for Thailand than they were for many other countries; secondly the share of Thailand in total world trade of many export commodities has been small enough so that in all these cases, the major problem that is the limiting factor on export expansion appears as supply deficiency rather than as lack of foreign demand. There are notable exceptions to this second generalization among which I may single out rice and kenaf for special mention.

* This paper was presented at the tenth SEANZA Central Banking Course. October 7–December 13, 1974. Bangkok.

Feature Two: Thailand is predominantly an agricultural economy. As before, citing the proportion of agriculture in GDP (about one-third of total GDP at factor cost) is apt to be misleading, as a great deal of the manufacturing, most of wholesale and retail trade and a significant portion of transport sectors consist of processing, handling and moving agricultural products. On the other hand, if we look at the share of labour force in agriculture (about 75–80%), this figure definitely errs on the high side, as many people who call themselves agriculturalists earn significant proportion of their incomes outside the agricultural sector. One feature concerning Thai agriculture which sets it apart from other Asian countries is that here, agriculture has been operating in a *land-surplus* environment with cultivated area expanding somewhat ahead of agricultural labour force. This has made the hypothesis of long-term permanent surplus of labour (disguised unemployment) somewhat untenable in the Thai context. However, when the non-agricultural sector has to go through a recession and a fall-off in employment, it is possible that part of this resulting surplus would temporarily move into agriculture or more accurately stop moving out of agriculture. Thus, agriculture is best treated as a “pool” which may cushion short-term fluctuations in the non-agricultural labour force, but from which *permanent* removal of labour can only be effected at the expense of agricultural output. Open urban unemployment is thus a phenomenon rarely picked up in labour force surveys.^{1/} At the same time this kind of disguised unemployment is very difficult to detect because of its seasonal and cyclical nature, as distinct from the chronic underemployment talked about in the development literature.

Feature Three: The capital market in this country is relatively primitive, as is much of the monetary and fiscal policy instruments commonly used in Western countries. We do not yet have a rich history of modern warfares that were so responsible in swelling the volume of public debt and which were, I believe, a very important stimulant to the development of capital markets in Western countries. Nor is our industrial sector sufficiently advanced so that large corporations have gone beyond the ability of the founding families to finance them and therefore require the formation of a capital market to facilitate transactions in shares and bonds among a wide clientele of holders of these papers. This is of great importance from the point of view of policymakers interested in macro-economic control mechanisms. It means, for example, that most elementary of tools taken for granted by Western central bankers to control the volume of money supply—the open market operation—is not available to our friends at the Bank of Thailand. Money supply changes occur as a result of three factors:

(a) A balance of payments surplus or deficit. This may, within limits, be manipulated through exchange rate adjustments, or modifications in the system of restrictions (import control, tariffs, etc.) on foreign trade.

(b) Government budgetary surplus or deficit.

(c) Changes in households' propensity to use commercial banks' services. A particularly important controlling factor here may well be the rate of interest on savings and time deposits.^{2/}

^{1/} One reason for this is the fact that given no welfare system of any kind, unemployment is a luxury affordable by relatively few people. It is not surprising that recent discussion of unemployment problems has centred around the graduate unemployment problem.

^{2/} Here I am following ideas expanded in Ronald I. McKinnon, *Money and Capital in Economic Development*, Washington, D.C., The Brookings Institution, 1973.

Of these three factors determining the quantity of money supply in the economy, the first and third are never employed to influence money supply as such, and they are rarely employed to achieve other objectives. Most of the policy debates on the management of the Thai economy in the short run have thus homed in on one variable, i.e. the government budget surplus or deficit. In actual fact, the point of concentration is even narrower than that. For all kinds of reasons, the government, whatever their political colourings, have been extremely reluctant to tamper much with taxation rates, the sole and significant exception being export tariffs, particularly on rice. And even on this the determinants of rice export taxes are only incidentally connected to macro-economic stabilization policies. Given this attitude towards tax policies, then, the surviving policy instrument remaining in the hands of the government is the government expenditure policy. It would not be an exaggeration to say that throughout most of the post-war period, this is the *only* short-run macro-economic policy instrument employed by the government. Even then, there are certain rigidities built into Thai government expenditure patterns that limit further a free use of this one remaining instrument.

To sum up, the Thai economy has been characterised above as being open, agriculture-based and lacking in many stabilization policy instruments. Nevertheless, the performance of the Thai economy, particularly over the period 1955–1972 has been said to be characterised by a somewhat remarkable degree of stability, where *a priori* one would not expect it. Clearly there must be some self-adjusting mechanism which has generally kept the economy on an even keel throughout most of this period. The next section will closely examine the idea of stability as applied to the Thai economy, and also a search for this self-regulation mechanism if any exists.

B. The Stabilizing Mechanism

There are two issues on the question of stability :

(a) There must be price stability. This means not only stability of the general price level, summarised in the Consumer Price Index (CPI) or the GDP Deflator,^{3/} but also of individual commodities which yield significant incomes to large groups of population. To chase this problem would take one so far afield that I have thought it best to drop it.

(b) The aggregate level of output and employment must be at the level compatible with the fullest utilization of domestic resources available, i.e., there must be no short-run deficiency of demand which limits aggregate output and employment.

I shall examine price stability first.

Table I gives the distribution (in number of years) of the yearly changes in prices, using both the CPI and GDP Deflator as indicators. As can be seen, the rate of inflation in Thailand has been modest, and to that extent the performance of the Thai economy has been quite respectable, certainly as compared with other underdeveloped countries and also as compared with some developed countries.

^{3/} The Wholesale Price Index (WPI) is excluded from consideration, as there are fairly significant weights attached to export commodities not much consumed domestically (rubber, maize, cassava, kenaf). If these commodities go up in price, a situation much to be desired, then the WPI would also go up.

TABLE I
 Distribution of Yearly Percentage Changes in
 Consumer Price Index and the GDP Deflator. 1958–1972

(Number of years)

	CPI (for Bangkok Only)	GDP Deflator
Negative	2	5
0.0%–2.0%	5	3
2.1%–4.0%	6	3
4.1%–6.0%	0	1
6.1%–8.0%	1	2
	14	14

Source: CPI—Ministry of Commerce; GDP Deflator—National Economic & Social Development Board.

The *prima facie* reason for this is not difficult to establish. Given that Thailand is an open economy with domestic prices dictated by foreign prices, and given that the world economic environment at the time (1955–1972) is one of modest inflation, the domestic price performance would thus reflect trends in the world at large. Indeed the trend in Thailand may even be marginally better than the world at large, as Thailand can shift its markets (at least for imported goods) from countries that are inflating relatively fast to those whose price increases are more modest.

All this would however be true only on one condition, viz. that the balance of payments is not in deficit long or often enough to call forth significant adjustments in exchange rates or, what amounts to the same thing in this context, changes in tariffs and various kinds of trade restrictions. Any such changes in exchange rates or tariffs or trade restrictions would promptly cause the domestic rate of inflation to differ significantly from the world rate of inflation. The problem of explaining price stability is then reduced to the problem of explaining the persistence of balance of payments surplus which makes all such policy measures as devaluations, trades restrictions etc. which most politicians—and central bankers—regard as painful adjustment measures unnecessary. To understand this we have to go back to a series of decisions taken in the middle and late 1950's. During that period the government made two basic decisions:

(a) To simplify a complex multiple exchange rate system and set a new, relatively low parity for the baht.

(b) To change the basic strategy of development. The motivations and the details of these changes will be examined more thoroughly in Chapter 2. For now, the feature that is of relevance is that this change has as its by product a fairly rapid rate of growth of exports, particularly between 1958–1966. After 1966 this growth began to slacken, but the situation was saved by massive infusions of U.S. money as the U.S. began constructing facilities to aid its Viet Nam war efforts, and when this in turn slackened there was a rapid expansion in the number of (non-military) tourists visiting Thailand. Towards the end of this period, problems were being felt concerning the maintenance of this continuous expansion of “exports” (including here other sources of foreign exchange such as American military spending and tourism) and Thailand did run into a series of deficit years in 1970 and 1971, but the years after that and the drastic changes that then occurred have confused the trend somewhat.

To sum up, the years between 1958–1972 have been noted as years of relatively high exports growth. Exports of goods and services expanded at the rate of 10.6% per annum (at current prices). This has been more than sufficient to pay for an increase in imports of goods and services at the rate of 10.2% (at current price) with only manageable and easily acquired additional inflow of foreign resources. What needs explaining then is why there has not been a runaway increase in imports that exceeds the exports, and thus leading to a chronic balance-of-payments problem so characteristic of many underdeveloped countries. To do that we need only demonstrate that a balance-of-payments deficit is self-correcting. Assume that there is a crop failure that reduces the value of exports for a given year without, as yet, any impact on imports, there would then be a balance-of-payments deficit. This deficit would then have a deflationary impact on the supply of money *and* on the level of domestic activity (particularly the non-agricultural sector), which in turn would depress imports. As long as this deficit lasts, imports will be continually depressed until it falls back to the same level as the diminished exports. The argument can be reversed for the case when there is a balance-of-payments surplus.

This little demonstration has assumed away the government sector and its role altogether, the better way to highlight the self-correcting feature of the economy. However as it turned out, government does have a significant role to play after all, and this is owing to the rather peculiar fiscal behavioural pattern of Thai governments touched on earlier, i.e., the extreme reluctance to use tax policy flexibly, combined with a somewhat tardy response on the use of expenditure policy. For during periods when exports are booming, usually followed by rising imports, government revenues which are so dependent on foreign trade taxes of various kinds would climb up, government expenditure would be much slower in catching up, so that normally in a balance-of-payments surplus year, the government has a tendency also to have a fiscal surplus. The impact on money supply and the general level of activity is however in the opposite direction. This is a phenomenon well known in the West as “fiscal drag”.

Table II below shows the rough correlation that exists between the balance of payments and the fiscal balance. As can be seen, the earlier 1960's when the balance of payments was recording continuous surpluses were also years of fiscal surplus, and as Thailand moves towards deficit in 1970–71, this was accompanied by growing fiscal deficits. The turn back towards balance-of-payments surplus in 1972 also shows corresponding movements on the fiscal side.

TABLE II
A Comparison of Fiscal Surplus and Balance of Payments Surplus

(Millions of Baht)

	Fiscal Surplus ^{4/}	Balance of Payment Surplus
1961	736.4	
1962	559.9	
1963	313.2	
1964	614.1	1,430.3
1965	594.6	1,985.0
1966	1,647.7	3,304.4
1967	— 289.8	1,313.0
1968	— 977.5	449.1
1969	— 2,227.9	— 913.8
1970	— 4,495.3	— 2,652.0
1971	— 4,066.1	— 335.2
1972	— 128.1	3,991.4

Source: Bank of Thailand.

^{4/} The concept of fiscal surplus used here is receipt – expenditure + domestic borrowing other than from the Bank of Thailand. In particular, borrowing from commercial banks and from government saving banks are included as contributing to the surplus, and therefore deflationary.

This behaviour on the part of the government has clearly toned down the inflationary impact of a balance of payments surplus and thus has stretched out the surplus years by preventing a more rapid catching up of imports, in the process enabling the Bank of Thailand to build up a truly massive reserve position. On the other hand the deficit on the balance of payments in the period 1969–1971 would have been drawn out longer as a result of fiscal policy, had not the government at last stepped in with an uncharacteristically sweeping tariff increase in July 1971. Thus if one desires rapid adjustment to balance-of-payments, the government's fiscal behaviour may be regarded as somewhat destabilizing, in the sense that it will delay or prevent that adjustment. However, Thailand has been lucky in that the surplus years were long enough to enable her to have a well-nigh impregnable reserve position, whilst its deficit years were interrupted by the commodity boom of 1973–4 which we examine later. The foreign exchange rate could thus be maintained and price stability is the result.

Whilst the fiscal behaviour may retard somewhat the equilibrating mechanism in the balance of payments, its impact on the domestic level of activity has been a stabilizing one. Thus much of the boom atmosphere that accompanies a too sudden expansion of exports would be deflated somewhat by this phenomenon of "fiscal drag", to use a term now in vogue in Western countries. Similarly a trailing off of export growth, as in 1969–1971 will be somewhat countered by a budgetary deficit. It must not be forgotten, however, that Thailand is basically an agricultural country with a technology that is heavily dependent on the vagaries of weather. The volume of our exports with the bulk of it coming from the agricultural sector is also tied to the weather.^{5/} These variations cannot be eliminated except by a long-term shift in our agricultural technology. The only thing that can be done is to minimize their impact on the rest of the economy.

To sum up, the situation before 1973 then is one which exhibits remarkable stability—a stability that owes as much to the basic economic mechanism underlying the economy as to the behaviour pattern of the Thai authorities. Please note the use of the term "behaviour pattern" rather than the more purposive term "policy". To use the latter term would be altogether too flattering. Why this should be so would become clear when we turn to the years 1973–74.

C. Two Years of Instability 1973–1974

One word would sum up the behaviour pattern of the Thai authorities to the macro-economic *fluctuations* of the years 1958–1972—passivity. Given the fact that the world economy was basically stable during that period and the likelihood that the Thai economic mechanism is inherently stabilizing, passivity may well be a good strategy. If all alternative active strategies can be worked out and considered, a passive strategy may even be shown to be optimal. In any case, the proof of the pudding is in the eating and when we look at the economic performance of the Thai economy between 1958 and 1972, we will have to agree that the pride that the Thai authorities took in their role (or non-role) in successfully stabilizing the economy may well be perfectly justifiable.

However, this passivity, when carried over to a completely changed environment of 1973 and 1974 is extremely hard to defend. The severe atmosphere crisis that overtook

^{5/} Foreign demand conditions may also affect the domestic economy, although I believe this may be exaggerated.

most countries of the world in these last two years has its origin in a situation where each country's terms of trade against the rest of the world have been drastically realigned, as a result of the commodity boom, culminating most spectacularly in the petroleum crisis. The big losers are the industrialized countries and a substantial subset of underdeveloped countries (particularly those who are net food and oil importers). For each country, this terms-of-trade shift is a loss in the real income of the nation. Somebody must bear the burden of this loss. The severe inflation in these countries (particularly the industrialized ones) is basically the outcome of a frantic game of pushing this burden to the next man.^{6/}

How does one classify Thailand as a loser in this price game; or as a winner? I am inclined to place it as a *small* net loser. It has always been a large exporter of food and other primary commodities (e.g. rubber and tin) which have all had fairly hefty price increases. These gains, I believe, have been more than offset by rising petroleum and fertilizer prices,^{7/} but only after the first quarter of 1974.

Nevertheless, it is necessary to stress the fact that, probably, the net loss through the terms of trade is relatively small, and certainly smaller than the relative loss that most developed countries had to face. Since Thailand did not have the same magnitude of the problem facing the developed countries, there was and there is no reason why the inflation that was raging in the developed countries would have to be imported here. An activist programme would therefore first try to insulate Thailand from this price inflation by taking appropriate exchange rate measures from time to time by constant adjustments of the baht parity. What the authorities eventually settled on was to fix the parity of the baht in terms of US. dollar and allow the baht to be dragged up and down the foreign exchange markets in the company of a currency which was definitely no longer a pillar of respectability.^{8/} The consequence was that the domestic economy was exposed to the full blast of the world inflation. Our inflation rate which had always stayed below 10% since 1958 was now in the 15–20% range.

The "fiscal drag", a consequence of passive economic policy, reappeared — this time with a vengeance. Our tax system relies heavily on indirect *ad valorem* taxes. The inflation therefore pushed the revenue figures up very rapidly. At the same time there are two important commodities on which the government did have definite policies to insulate the domestic prices from the world prices, namely rice and sugar. One of the means used to attain the objective is to put on export taxes on these commodities. When prices of these commodities shot up further, the government sucked in more revenues.

On the expenditure side, the government response was much slower. Budgets are set in money terms, usually using the previous year's prices. At times of severe inflation, this becomes quickly out-of-date. Unfortunately the budget is supposed to set a ceiling. Ideally, with prices going up, this ceiling should go up with the prices. But in the Thai fiscal system, this upward movement has to be renegotiated. All bureaucratic wheels grind slowly, but nowhere, I believe, more slowly than in Thailand. The upshot was that in fiscal year 1973/74, government departments ended up grossly underspending their allocations at a time when revenues which were not subject to similar constraints, were rising very rapidly. A projected large deficit became a very large surplus.

^{6/} For many of the ideas expressed in this paragraph, I am much indebted to Mr. Forrest Cookson with whom I have had many rambling but always stimulating discussions.

^{7/} I eschew the use of import and export price indices. For as their source, the Bank of Thailand would be the first to admit, we are far from having a really usable import price index.

^{8/} There was a minor revaluation of the baht against the dollar, of about 3%, in mid-1973.

This came at a time when private investment too fell off sharply. The reason behind this fall in private investment is a little unclear. Contributing factors are rapid increase in plant and equipment costs, labour unrest (itself a consequence of the inflation) and political uncertainty following the October 14 Revolution last year.

The sharp cutback in demand as a result of the fiscal surplus and slackening of private investment is leading the Thai economy into a recession. Industries, already hurting from the fall in foreign demand, is finding that the domestic demand too is not buoyant will probably curtail production. The only ray of hope comes from the agricultural sector. Unfortunately, it may be the case that what they are gaining in better net farm prices, they are losing in reduced off-farm employment opportunities as a result of the recession in the urban areas.

Gone, forever it seems, are the calm and quiet of the late 1950's and the 1960's.

II. GROWTH

A. Pre War Heritage

To understand the postwar history of economic growth in Thailand, it is necessary to begin with the heritage left by almost a century of almost colonial economic system. I used the expression 'almost colonial' because although Thailand was never under the political domination of any temperate-zone powers,^{9/} it agreed to sign the Bowring Treaty with the British in 1856. This treaty more or less imposed a 3% tariff on most imported goods and many other severe limitations on domestic fiscal policy for the next seventy years or so. Changes in the Treaty would have to be agreed on by both signatories. This was very clearly part of the phenomenon now called by economic historians the Imperialism of Free Trade. It can without exaggeration be said that the Bowring Treaty set the pattern of economic life for the next eighty years or so until the outbreak of the Second World War.

Basically the Thai economy's response to the imposed free trade was to the pattern dictated by static comparative advantage theory. Thailand at the time had abundant land, very scarce capital and somewhat scarce labour. Clearly agricultural production is more advantageous than manufacturing. Within agriculture we concentrated on rice production, even though, *a priori*, rice seems a rather inappropriate crop for a labour-scarce economy as Thailand was a century ago. The explanation is that much of the land suitable for agriculture at that time is in the Central Lowlands—much of the upland areas being highly malarial. The Central Lowlands in Thailand however are suitable for nothing except for growing rice.

Free trade thus converted the vast majority of Thais into rice farmers. One benefit from *not* being under the political domination of external powers is that our land policy was biased in favour of smallholders and against plantations. In any case the choice of rice as the staple commodity precludes the establishment of a plantation economy. Our export economy was thus based on the production of small indigenous farmers.

As all textbooks say, pursuit of static comparative advantage yields welfare gains, known in the literature as the "gains from trade". What is rarely mentioned is that these gains are to be had only once and for all. Thai farmers who settled and farmed the Great Central Plains were able to capture a great deal of these welfare gains.

^{9/} I use this expression rather than the more usual "European powers" in order to be fair to our American and Japanese friends.

Let me quickly add that this last statement would be hotly disputed—there are many proponents of the view that most if not all of these welfare gains were captured by landlords and also by Chinese middlemen who tended to remit the proceeds to China. There is no doubt that *part* of the gains was captured by the landlords and middlemen; how much, nobody knows. Yet it must also be maintained that farmers did share in these gains, for they continued to expand the area under cultivation. Nobody has ever suggested that they were forced to do this. If they expanded rice farming voluntarily, then the hypothesis that they did so only because they could improve their welfare appears more reasonable.

The gains that were made by farmers were once-and-for-all gain, as has been already stated, as a result of the exploitation of hitherto-unexploited static comparative advantage. This was not converted into continuous gains in each rice-farmer's income. To be sure, the rice economy as a whole was continuously expanding, but this was a horizontal expansion occurring as a result of population growth and the bringing in of new farmers into the commercialized sector. As each farmer enters the commercialized sector, he improves his welfare, but after that there was no way for him to expand his income except by improving his technique of production, which did not occur.

The situation is in contrast to the other pioneer areas in the temperate zones, such as the U.S., Australia and New Zealand. There, a secular increase in income was made possible through continuous investment and the introduction of new technology. Here in Thailand, capital scarcity and the low level of technological knowhow became important limiting factors. Whatever scarce resources became available for purposes other than consumption, these would be siphoned off by the government. As far as government policies are concerned, top priority was given to administrative development which drew off not only capital resources but also much human capital. Nevertheless, as J.C. Ingram points out, there *were* surplus government resources, but these tended to be accumulated in excessive foreign exchange reserves.^{10/} Ingram tried to grapple with this question, but the most reasonable explanation seems to me to be that the Thai authorities were concerned above all to keep the country politically independent. They had at that time seen too many countries slide into dependency status arising from the financial insolvency of their sovereigns. The Thais thus felt that the best guarantee of independence is financial solvency. Hence the aversion to borrowing and the fondness for piling up foreign reserves.^{11/}

To the extent that these investible resources remained in private hands, most of them would have relatively few outlets other than in financing the expansion of the area under cultivation. No new technology was available in readily usable form for Thai farmers. In a land-abundant economy such as Thailand, mechanization would readily suggest itself, as it did to many people then. However, the machines available then were from temperate zone countries and for growing wheat, and completely useless

^{10/} James C. Ingram, *Economic Change in Thailand. 1850-1970*, Stanford, Stanford University Press, 1972, chapter 10.

^{11/} Ingram's explanation is in terms of the influence exerted by the British Financial Advisor who wanted the funds put in London. (*Ibid.*, p. 170) The issue turns on how dominant the foreign Advisors were in Thai affairs. A number of historians are disputing this, but they are citing evidence based on Advisors in other relatively unimportant ministries such as Education. The precise relationship between the Financial Advisor and the Thai authorities remains to be researched into.

in the mud and water of the typical paddy farm of Central Thailand. No domestic development of technology appropriate for this type of environment took place.^{12/}

In sum then, the pre-war development was one of intense concentration in agriculture, particularly in rice farming. The production system was based on smallholding farmers, using very little modern technology. Superimposed on this was a fairly small trade sector engaged in processing and exporting of rice. Other major items of exports: rubber, teak and tin are of regional importance but will not be touched here.

The Bowring Treaty eventually ceased to be effective in 1936, although substantial fiscal autonomy was achieved already in 1926. Tariffs were scaled up from the very low levels imposed by the Treaty. However, no consistent programme was undertaken that had a noticeable impact on the economic structure of the country.

B. Some Characteristics Affecting the Postwar Growth Picture

We shall omit the war and the immediate post-war period and pick up the story from 1951 onwards when the post-war recovery period may be said to have come to an end. The Thai economy at that time faced some very new situations, which include :

i) The closing of the rice frontier. Much of the land available for rice cultivation was now occupied, particularly in the Central Plains. The expansion that henceforth took place was in the very poor Northeastern Region.

ii) The acceleration in the population growth rate. Pre-war population growth rates were in the region of 1-1½% in the post-war period it rose to 3.0-3.3%

iii) The opening up of the upland frontier. Much of the upland areas were, as already mentioned, closed to human settlement on account of malaria. With its eradication, carried out successfully in the late 1940's and the early 1950's much of this land then became available for cultivation.

iv) The birth of the People's Republic of China with eroded considerably the ties of Chinese businessmen to their homeland. This led most of them to begin regarding Thailand as their permanent residence. Remittances sent to their erstwhile homeland to build up their assets there dropped off sharply.

Added to these new developments is the unfulfilled promise of a change that occurred well before the Second World War, i.e., the fiscal autonomy obtained as a result of the abrogation of the Bowring Treaty. This opened up the possibilities of the government using the tax system to redirect national resources towards desired ends.

C. Economic Nationalism, 1951-1958

All these changes required in the post-war period a clearly defined economic development goal in order for the Thai economy not only to meet the challenge posed by the changes, but also to be able to make the economy more dynamic than it had

^{12/} This was odd, as there was not that severe a lack of technological skills locally. Thus Chinese entrepreneurs were able to set up and produce their own steam rice mills in competition with the Europeans who imported their machines. Local production of the mills took place five decades after the Bowring Treaty (G.W. Skinner, *Chinese Society in Thailand: An Analytical History*, Ithaca, Cornell University Press, 1957, p. 104) It may be that local capacity at that time still lay in *imitating* foreign designs, not in designing the machines themselves. In the case of agricultural machinery, foreign designs of machines usable in paddies were almost completely non-existent until the advent of the power-tillers in mid-twentieth century.

hitherto been. In the event, the policies favoured by the government between 1951 and roughly 1958 was one of vague economic nationalism. The objectives to be followed were never clearly spelt out. The result was a set of policies which had generally disastrous consequences.

First, in the foreign exchange field, the period began with the Korean war boom which was very profitable for much of Thai exports, although not so for export producers, the farmers, much of the revenue being skimmed off by the government. Then, in 1952, when the boom was already past its peak the government decided to *revalue* the baht by about 11.33%. The result was a balance of payments "crisis".^{13/} This led to import controls being imposed in 1953.

Second, the government encouraged during this period a series of investments in miscellaneous industries, not on the basis of any well-thought-out programme, but almost randomly. The vehicles used for these activities were a number of semi-public corporations which were however able to secure government guarantee for their loans.

Third, the agricultural sector, particularly rice-farming was given a heavy new burden through the imposition of what was at first an implicit export tax (through the multiple exchange rate system) and which later became an explicit export tax (called the "rice premium"). This severely retarded advancement of this crucial sector, because this heavy taxation was not balanced by a similar concern when it comes to government expenditure. True the government obtained an IBRD loan for the construction of a diversion dam at Chainat, but this was not put in the framework of any systematic agricultural development programme.

In fact, there was no systematic programme of any sort for any sector. The result was a growth rate of GDP at constant prices of only 4.1% between 1951 and 1958. This was due largely to low export growth arising from tardy agricultural growth.

Even when viewed in its own nationalistic terms, the period was a failure. Economic nationalism in Thailand has directed itself against Chinese economic dominance. Government policies in the industrial area were ostensibly designed to break the alleged Chinese hold on the economy. Yet in pursuing these policies, it was found necessary to have the Chinese entrepreneurs in partial control of the semi-public corporations. Because these corporations have special privileges, in some cases amounting to monopoly rights, those Chinese businessmen who managed to push their ways into these companies became immensely powerful vis-a-vis their rivals. The foundations of many powerful Thai-Chinese business empires that now exist were laid during this period.^{14/} At the same time, the farmers who were mostly ethnic Thais were being heavily taxed.

D. Liberalization, 1955–1958

Given these failures, it was no surprise that this type of policy came under strong attack and the pendulum began to swing in the other direction.

^{13/} See S.C. Yang, *A Multiple Exchange Rate System: An Appraisal of Thailand's Experience 1946-1955*, Madison, University of Wisconsin Press, 1957, chapter 8; T.H. Silcock (ed.), *Thailand: Social and Economic Studies in Development*, Canberra, A.N.U. Press, 1967, chapter 7–8. As pointed out in the latter publication, the reserve available was about 90% of the import, and the yearly deficit was less than 10% of the reserve.

^{14/} For a brief glimpse of these interesting symbiosis between the government (or rather, the government officials) and the Chinese in the banking sector, see T.H. Silcock, *op. cit.*, pp. 182–185.

On the foreign exchange issue, the dismantling of the multiple exchange rate system began in 1954 and was substantially complete by 1955—the export tax on rice unfortunately remained intact, but this time as an explicit tax. This was followed by the gradual dismantling of import controls.

In 1957 the National Economic Development Corporation Ltd., one of the semi-public companies floated during the early 1950's collapsed ignominiously leaving the government with very little assets and a lot of debts, and exposing the immense corruption that was being carried out behind the facade of economic nationalism. This raised serious questions concerning the advisability of using this mode of development, on the part of the public because of the corruption, on the part of the corrupt officials because of the too rapid exposure of their misdeeds.

This liberalizing mood prevalent in the mid-1950's was largely negative however. There was no positive programme launched for specific objectives. This is probably because the mid-1950's was noted for the severe dissension within the ruling circles, which was finally resolved when the autocratic Field Marshal Sarit came to power in October 1958.

This political development followed closely on the completion of a report by an IBRD mission entitled *A Public Development Program for Thailand*^{15/} which laid out the strategy preferred by the World Bank with heavy emphasis on infrastructure supporting agriculture. The initiative for this would come from the public sector which would eschew direct investments in industries. To make explicit this strategy and to make for a more consistent government policy, a "development plan" (which was essentially a public expenditure plan) was suggested.

These suggestions accorded well with the mood of the time and the Sarit government embarked on a massive programme of infrastructure development. In fact, much work on this—particularly road building had languished for the previous two decades. There was therefore a substantial backlog of projects to be carried out. These projects were collected together and the listing was glorified by the title of the First Six-Year Development Plan.^{16/}

E. The Agricultural Sector 1958–1966

Whatever the administrative background of these projects, the fact remained that their implementation led to substantial increases in agricultural production, particularly of upland crops. As has been stated already, the rice frontier has substantially come to an end. Luckily for the Thai farmers, a new frontier opened up in the upland areas, where the malaria eradication programme made these areas habitable for the first time. Unlike the paddy areas whose links to the outside world are assured by the age-old system of canals, the upland areas require links by road or rail. The rapid buildup of the highway network in the late 1950's and the early 1960's opened up vast areas for cultivation. This was by no means sufficient by itself. Clearing and land preparation required a very large amount of work. The underlying land-abundant character of the Thai economy again made itself felt, for the big new innovation in Thai agriculture was not in the

^{15/} Johns Hopkins University, 1959.

^{16/} This statement is based on the folklore circulating in the National Economic and Social Development Board (NESDB) and not on the actual perusal of the document itself. The First Plan is an extremely elusive document, not to be found in any library. For fear of embarrassing him I have not asked the Secretary-General of the NESDB for that document.

area of fertilizers, as in most other Asian countries, but in mechanization. In practically all the upland areas, tractors completely replaced animal-power. This use of tractors permitted each farm household to cultivate a much larger area of land than he would if he was to use animal-power. Thus the extensive mode of cultivation previously noted in connection with rice continued in the case of upland crops. In newly cleared areas, yields were good because of the natural fertility of the soil. Once these were used up, the yield would drop sharply. Some farmers stay on despite the drop as the yield they get is still substantial compared to the *marginal* yield they would have in the rice areas whence many of them came. Others move to newer areas, practising what is to all intents and purposes, shifting cultivation.

The efforts of these new pioneers paid off in a much enhanced agricultural production between 1958 and 1966, and consequently in a very rapidly rising volume of exports of these crops.

Rice cultivation, the traditional Thai activity made a modest advance. The vast expenditure on irrigation did not yet yield significant results, partly because much of the subsidiary work (e.g. on field ditches and dykes) had not yet begun, also dry season cropping was prevented by the lack of development on photoperiod insensitive varieties. A very slow upward climb of yield from the nadir attained in 1957 (1.4 Tons/Ha.) began to take place, as a consequence of better water availability in the wet season, but probably more as a result of the government trying to distribute improved native varieties of rice. Part of the explanation for this unspectacular results as far as rice production is concerned is the depression of domestic price by the rice export tax.

This lackadaisical performance of the rice sector was however more than compensated by the rapid growth of the upland crops. Aggregate exports, once more established as a great engine of economic growth, expanded rapidly until about 1966-67.

For the economy as a whole there was a definite slackening in the tempo of growth around 1967. The average rates of growth of GDP at constant prices between 1958 and 1966 and between 1967 and 1972 are 8.1% and 6.5% respectively. To some extent this can be traced to certain developments in the agricultural sector, the rapid growth in the early years were accompanied by increased yields as commercial production of many upland crops replaced the more haphazard production of the same commodities in the earlier years. As the frontier expands, however, the proportion of new, high-yielding land to older, lower yield lands declines and there is thus a downward pressure on yield and production.

The picture for rice is even gloomier. The world price of rice which peaked in 1968 fell rapidly after that. These were the years of high tide for the Green Revolution. Whatever boon this may have brought to the other countries, for a rice exporting country such as Thailand, it was of very doubtful value. Thai farmers could not in the beginning benefit from the Green Revolution either because of the poor eating quality of the new miracle rice which was completely unsuitable for the local market. The depressed prices killed off any incentive to innovate with the result that Thai rice production has now been roughly static for about 8 years. There are promising developments however which will bear fruit later, it is hoped. There are areas where good control of water is at last available. Second cropping is now widely practised, and with it the use of the new fertilizer-responsive varieties. Mechanization has done away with animal-power almost altogether in the Central Plains which permits farmers greater flexibility in the timing of his activities.

F. The Industrial Sector after 1962

The above account shows the agricultural sector to be the gain propelling force of growth before the end of this period, the growth rate of agricultural production in the post-1958 period, but it should not be taken to mean that the industrial sector was completely neglected by the government. In accordance with the new strategy ushered in by the Sarit government, the government ceased taking a direct role in the industrial sector. It decided instead to promote private investment in the industrial sector. Although an Investment Promotion Act was in existence prior to 1958, this was generally regarded as ineffectual. The law was considerably modified and a new Act passed in 1962. Since then the Board of Investment (BOI) has been busily issuing promotion certificates which entitle recipients to various tax privileges not only concerning income taxes, but sometimes concerning import duties on machineries and even on raw materials as well.

The main criticism that was levied against the BOI since its inception and is still being levied now—twelve years after the 1962 Act—is that the BOI has been extremely promiscuous in giving away promotion certificates. It has never seriously asked the question: what industry NOT to promote. Like a woman out on a shopping spree,^{17/} it has issued promotion certificates, regardless of whether they are mass consumption items (textile) or luxury goods consumed by relatively few people (refrigerators and air-conditioners), regardless of the minimum scale of production (motor-cars), regardless of the actual intentions of those who asked for and got the promotion certificates (petrochemicals), regardless of whether the industry is already firmly established and thus new investments in that industry would not be as risky as in the beginning (hotels and textile mills in the late 1960's, cement) and regardless of efficiency (fertilizers). A policy shift was announced with great fanfare in 1970 that the BOI was shifting its policy from one of promoting import substitution to export promotion. Like the bourgeois in Moliere's play who one day suddenly discovered that he had been speaking prose all his life, the BOI discovered in 1970 that it had been promoting import substitution all its life. There is, in fact, very little evidence that the BOI was following any conscious policy at all until then. The famous list dividing industries to be promoted into Group A ('vital and necessary'), Group B ('less vital and necessary') and Group C (others) has been the cause of much scholarly discussion as to its rationale, largely by foreign scholars anxious to placate Thai feelings by attempting to find wisdom where none exists.^{18/}

The policy towards foreign investment is also mainly one of uncritical acceptance, without any clear criteria on what Thailand's needs in this area are, what the motivation of the foreign firm is, what the benefits and costs of foreign investment are, and what the alternatives facing Thailand are. It is only in 1973 that a subcommittee has been set up to examine the issue in its totality.

The end result of this hectic certificate-issuing activity (an activity which the BOI took great pride in) was a higgledy-piddledy growth of Thailand's industrial sector, with a spotty performance in terms of efficiency. Very few of the industries can survive without tariff protection, although among these few there are admittedly some very important industries, such as textiles, hotels, cement and glass. Even though the share of industry in the GNP expanded, it is doubtful if this result would hold if more realistic prices were used in the calculation of value added.

^{17/} To be fair to the ladies, let me point out that all Secretaries-General of the BOI have been male.

^{18/} Ingram, *op. cit.*, p. 289 is the frankest. Silcock, *op. cit.*, p. 269 reads capital-intensity into the 'vital and necessary' industries.

Because of this almost random pattern of industrial growth, it has not played the role of the leading sector suggested in most development literature.^{19/}

G. Savings and Investment

The high growth rates of the 1960's raise the issue: how were the investments needed to fuel this growth financed? At the peak of the boom, in the mid-1960's the proportion of the gross domestic product that was expended on gross capital formation almost rose to a quarter from about one-seventh when Sarit came to power (13.2% in 1968, 23% in 1967). Since then the ratio has stayed up until 1970 when it was 24.1%, after which there were two years of sharp drops until it became 21.1% in 1972.

The determinants of savings and investment in Thailand are somewhat mysterious, at least to me. One striking feature that needs explanation is that in comparison, with other under-developed countries, the investment ratio appears quite high, even in the low years (1971-72). One may argue that the statistical bases for these estimates are shaky. This is only partly true. Indeed, if anything, the actual figures should be somewhat higher, as the national account estimates overlook some important types of investment, most notably those in land-clearing, and *new* plantings of tree crops, such as rubber, coconuts, etc.. The following is tentative explanation of this high investment ratio.

The main explanation is the level of real interest rates on bank deposits in Thailand, which until eroded by the inflation of the 1970's, were quite high. At first, it may seem strange that after dwelling on the absence of capital markets in Chapter 1, I should bring this concept up because the rate of interest seems so pre-eminently a market concept that questions may be raised as to its relevance in this context. Let me refer the questioners and doubters to the important book by Ronald McKinnon, previously cited.^{20/} There it was argued that in a country lacking in integrated capital markets (a "fragmented economy" in McKinnon's words), with indivisibilities in investment opportunities, real money balances are *complementary* assets to physical capital rather than competitive, i.e. more holding of real balances *encourages* more physical investment rather than *substitutes* for it. The correct strategy for promoting investment is thus to expand the supply of real balances. One non-inflationary way to expand real balances is to stimulate financial intermediation by banks and one way to do this is to make it attractive for people to use banks.

A major interest rate reform was undertaken in 1959 which raised the interest rates on time deposits, and in 1962, bank interest was made exempt from income taxation. These changes had dramatic results. Deposits increased spectacularly, with time deposits leading the way as can be seen from the following Table III.

^{19/} It should be borne in mind that when I talk of "industry" here, I mean mostly industries completely unrelated to primary production. A great part of Thai industry is still closely related to agricultural production (rice-milling, sugar refining, animal feed production, slaughtering, ice factory). Similarly the large observed growth of industrial exports in the 1960's have been in the products of these processing industries, most notably tin from the tin smelter established in 1966 and sugar. It was not until the great expansion of textile exports in 1972 and 1973 that the more modern type of industrial exports began to be more significant.

^{20/} See Footnote 2, page 26.

TABLE III
Private Residents' Deposits in Commercial Banks, 1958-1972

End-Year	Demand Deposits		Time Deposits	
	Volume (Million bahts)	Growth Rates (%)	Volume (Million bahts)	Growth Rates (%)
1958	2753.2		621.7	
1959	2939.6	6.8	766.7	23.3
1960	3619.1	23.1	1025.7	33.8
1961	3963.5	9.5	1485.3	44.8
1962	3980.0	*	3148.6	*
1963	4627.0	16.3	4255.0	35.1
1964	5127.6	10.8	5368.3	26.2
1965	5709.1	11.3	6406.8	19.3
1966	6774.1	18.7	8825.5	37.8
1967	7371.8	8.8	10979.4	24.4
1968	8299.1	12.6	13241.4	20.6
1969	8835.8	6.5	16099.8	21.6
1970	9342.7	5.7	19489.9	21.1
1971	10291.1	10.2	24172.4	24.0
1972	12316.0	19.7	31378.9	29.8

* Series break between 1961 and 1962, so growth rates are not computed for 1961-62.

Source: Bank of Thailand. Data for earlier years taken from Alek A. Rozental, *Finance and Development in Thailand*, New York, Praeger, 1970, p. 114, who cites the same source.

It is on the back of this large and continuous expansion in time deposits that the real balances advanced, which in turn stimulated the growth of investment. In this connection it is interesting to place Thailand in the context of other countries analysed by McKinnon. Of the many variables used by him to analyse changes in the financial structure in under-developed countries, let us take the simplest one: the ratio of M_2 (currency + demand deposits + time deposits) to GNP, and compare Thailand against those for other countries as is done in Table IV, where its relatively high position is confirmed.

TABLE IV
International Comparison of M_2 /GNP for 1968

Japan	0.95
U.S.	0.70
Germany	0.64
Belgium	0.63
France	0.60
U.K.	0.55
Taiwan	0.41
THAILAND	0.31
Ceylon	0.31
Argentina	0.29
The Philippines	0.29
Turkey	0.27
S. Korea	0.26
Pakistan	0.26
Brazil	0.24
India	0.24
Venezuela	0.24
Colombia	0.22
Chile	0.12
Indonesia	0.06

Source: R. McKinnon, *op.cit.*, chapter 8. For Thailand, calculated from Bank of Thailand data.

It would be nice to trace the exact pattern of the flow of funds in order to confirm this stimulative impact of the time deposit increase, but I think the present situation regarding data availability precluded that. Nevertheless, some impressionistic views concerning the role of the banking system in capital formation seem warranted:

(a) There seems to be the positive association between real balances and the savings rate suggested by McKinnon.

(b) Nevertheless, in Thailand, there is some undesirable side-effects that should be borne in mind. The 1960's saw, as a result of the above expansion in deposits, a concomitant expansion of the role of the banks and bankers in the economy of the country. Bankers in Thailand, as in many other countries, are not just bankers, pure and simple, but have many other business interests as well. The fact that a great deal of funds are now channelled through commercial banks naturally enhances their economic and also their political power.

(c) The expansion of the commercial banks coincided with the era of industrial promotion. Given the large profits to be made in some industries as a result of promotion policies, as well as the fact that bankers tend to have better connections with traders and industrialists (if they are not themselves traders and industrialists), the banks have probably performed the task of diverting funds from the agricultural to the industrial and trade sectors, as evidenced by the channelling of funds from upcountry areas to Bangkok.^{21/} Now, towards the end of the 1960's and 1970's, the agricultural sector was moving into newer technologies requiring more purchased inputs and therefore more credit. The private rates of return in the agricultural sector are probably higher than in the industrial sector, and the social rates are almost certainly higher. This diversion of the funds from the agricultural sector is therefore economically inefficient.

(d) The arguments in (b) and (c) would tend to lead to the conclusion that there had been excess demand for bank credit, suggesting in fact that interest rates are too low. In actual fact, for much of the period, banks tended to invest much of their funds in government securities rather than give loans or overdrafts to the private sector. This is so because government securities in Thailand are almost risk-free assets, which yield very handsome returns. The bank lending rates are then tailored to the bond rates, which tends to push the lending rates for high-risk borrowers close to or beyond the usury-law maximum of 15% per annum. This in turn means that this last class of borrowers, among whom farmers are the most important group, would tend to be turned away by the banks.

(e) The obvious solution to the problem—reducing the margin between deposit and lending (including bond) rates—have always eluded the government. To some extent, the government has tied its own hands by an almost total ban on entry into the banking industry. Why the government should have stuck to this policy for so long is a question which has too many ramifications for me to go into.

In sum, the banking sector in Thailand has been an extremely powerful mobilizer of saving in the economy, but has been much less successful in channelling this to productive use. Not only that, much of the banks activities has been to widen the income disparities in the economy as well, because the banks tends to concentrate their loans to the better-off borrowers and overlook the poorer farmers.

^{21/} A.A. Rozental, *Finance and Development in Thailand*, New York, Praeger, 1970, chapter 5.

Let us now take a brief look at the foreign resource inflow (included in this are the unrequited inflows on the official account).^{22/} Of the total gross capital formation, foreign sources supply an average of about 12% over the period 1964–1972, with large variations from year to year determined by the particular projects for which foreign financing was made available. Contrary to expectations, there is no clearly discernible trend within this period for private direct investment. But compared to 1951–1964, there seems to have been a sharp upward displacement in its role around the mid-1960's. Whether private direct investment complements or replaces local investment is a question which has interested many other economists. No answer to that will be attempted here. In fact, it is doubtful if the question is of much relevance to Thailand, as much of private direct investment occurs not because of any shortage of capital here, but more as a result of entry of foreign oligopolistic firms in order to protect their market share and in order to take advantage of the promotional privileges. Their net contribution to domestic capital formation is at best marginal.

Another important but unfortunately little known item is foreign credits to private firms, largely suppliers' credits. The gross volumes involved are expanding rapidly, although the net inflows are expanding less rapidly. So far there is little recognition of their importance, but in tighter balance of payments the large volumes can exert a destabilizing influence. As to their relative importance in financing investment, again it could not be more than marginal.

Contrary to the general impression, the role of government borrowing has been relatively minor, never more than a third of total inflow in 1964–1972, the bulk of it being contracted with hard-loan agencies such as IBRD and ADB.

If we add these up, the importance of foreign financing for capital formation, pure and simple, is relatively minor and probably dispensable in the sense that financing from domestic sources, should not be too difficult to arrange. Their importance lies more in the fact that this small volume of investments are concentrated on some few very critical areas both in the private and public sectors. The impact of the IBRD on many government operations has been profound and mostly beneficial. The impact of foreign private investment on local businesses has been equally profound, although probably of much less value. This is so particularly in the case of consumption goods where sometimes impregnable market positions have been allowed to be built up by foreign firms which tend to prevent new entry of purely domestic firms into the industry.

H. Environmental Problems

Before conclusion, let me follow the new convention that requires that every account of economic growth should be concluded with a tone of ecological worry.

Environmental problems in Thailand may be classified into three categories: industrial pollution, over-urbanization and environmental problems of the agricultural sector.

In most advanced countries, industrial pollution is a frightening problem. For an agricultural country such as Thailand, industrial pollution is the least of our problems, even though it is quite dramatic and claims the attention of the mass media. Indeed, it is precisely because the problem is a dramatic one that public opinion can be rapidly mobilized and which may be even capable of moving into action that seemingly immovable

^{22/} Thus if we refer to the Bank of Thailand balance of payments estimates, it would be Items C.2 and D.

object: the Thai civil service. The present water pollution problems created by the sugar-mills in Kanchanaburi falls in this category. Possible environmental effects of future projects are now raising quite a few questions. It seems that huge industrial projects will almost certainly be closely scrutinized, if not by the government itself, then by quite a few vociferous pressure groups.

It is not so much the dramatic effects of the few industrial pollution cases that are worrisome, but the cumulative effects of the small actions of large numbers of people that should give us more worry. This is clearly the case with the phenomenon of over-urbanization in Bangkok. There presumably is an optimal size of a city where the marginal social benefits of contiguous habitation just equal its social costs. Nobody has worked out what the optimal size of a city like Bangkok should be. Whatever it is, casual empiricism seems to suggest that Bangkok has exceeded that optimal size by a substantial margin. The problems of the public services in the city, our traffic problems, our housing problems, even our school problems have the same root cause, and whatever "solutions" are worked out for these problems, they will not be lasting solutions unless some serious attempts are made to limit the size of the city, whose population is now growing at the rate of some 6-7% per annum. How one can effect such a policy is an interesting question which will take us very far afield, but a necessary component of such a policy would be to make much of the infrastructure and public services that are available in Bangkok a more general phenomenon in upcountry towns, whose development at present is atrophied by the diversion of much of the resources to Bangkok.

The most serious potential environmental problem however arises in the agricultural sector. As has been said, the impetus given to that sector's growth by the expansion of upland (i.e. non-rice) crops is a very important phenomenon of the postwar scene. This expansion was made possible because of the malaria eradication which opened up previously uninhabitable areas for human settlement. Unlike some other countries where malaria eradication increases the population only without adding to resources, it was fortunate for Thailand that here the programme adds both population and land resources. However the programme here rests, as elsewhere, on the use of chemical substances (particularly D.D.T.) which are potentially harmful. Not only that, the effectiveness of D.D.T. is now on the decline with the evolution of D.D.T. resistant types of mosquitoes. Death rates from malaria is now once more increasing. Thus whether the gains made in the past few decades will be long lasting is doubtful.

There is a further problem created by the agricultural sector. Much of the expansion of the agricultural sector has been into forest areas, sometimes in watershed areas. Furthermore, a great amount of shifting cultivation is still practised by hill-tribesmen in Northern Thailand, source of the most important rivers in Thailand. Although this type of practise has been going on for centuries, population pressure within the hill-tribes is increasing the cropping frequency and shortening the fallow. The result is that much of Northern Thailand is now covered with economically useless Imperata grass. The government's forestry policy has been caught between an over-ambitious target of keeping as much land under forest as possible and a totally ineffective enforcement system. A realistic land policy is only now being worked out.

Once the land is brought under cultivation, new problems arise. Before the Second World War commercialized agriculture means rice cultivation which was carried on by traditional means. Despite the low yields, traditional rice cultivation raises no ecological problem. This is because in a given paddy field, there would be a large number of plant varieties. Most of the traditional varieties of rice, because of both natural and

farmers' selection, tend to be by themselves pest and disease resistant. The large number of varieties in a given field would reduce the risks from pests and diseases further.

With the introduction of new upland crops, usually based on a very small number of varieties, pest and disease problems began to reach serious proportions. Maize has in recent years been plagued with disease problems as well as with locusts. Cotton cultivation was expanding quite nicely in the mid-1960's, until it was all but eliminated by the boll weevil in *one* year (1968). It would now require a particularly courageous (or foolhardy) extension worker to recommend cotton to farmers.

With the expansion of rice areas under modern high-yield varieties, which introduces genetic uniformity into the paddy field, risks from diseases have increased.

The farmers' response to these problems has been to increase the dosage of insecticides and pesticides. Usage of these chemicals has expanded tremendously. Quite apart from the harmful health effects that these chemicals may cause, their use is self-defeating. They may be very effective in suppressing the pests for a year or so, but as in the case of D.D.T. and the mosquitoes, newer, hardier types of pests appear. This then requires intensified application of the chemicals which may again be successful for a year or so, but then even tougher types turn up, and the cycle repeats itself.

Clearly the solution lies in a radically different system of farming and pest control methods that rely less on chemicals and more on methods such as inter-cropping. This requires much more intensive research on the part of the public sector, and a more careful system of husbandry on the part of the farmers. There are problems with both. The willingness and the capacity of the public sector in this as in other areas is always doubtful, whilst the prevailing extensive pattern of cultivation prevalent among Thai farmers would be a serious obstacle to the adoption of a more labour-intensive type of agriculture.

It seems, therefore, that the agricultural sector, because of the very many challenges facing it, as well as the opportunities it offer, is destined to play a crucial role in our economy for some time to come.

1. Conclusion and Future Prospects

To summarize, this survey of selected aspects of economic growth try to look into and explain the following facts:

(a) The low growth rate of 1951-58, followed by a period of high growth rates between 1958 and 1966, and then again a slight slackening of growth rates between 1967 and 1972. The variations are explained largely in terms of the performance of the agricultural sector. This is particularly true of the period 1958 and 1966 when agriculture was in fact the leading sector.

(b) The investment rate is also observed to be fairly high, thanks to the performance of the banking sector. Foreign investment played at best a marginal role, quantitatively.

(c) There is also a negative conclusion on the role of the industrial sector, not withstanding (or perhaps because of) the efforts of the Board of Investment.

(d) Environmental problems are serious in two areas: those arising from over-urbanization and the problems generated within the agricultural sector.

The picture has changed radically in the past two years. It would be nice to add a few words about long-term prospects of the Thai economy in the late 1970's onto

the 1980's. There is so much uncertainty about the future world economic situation to which an open economy such as Thailand has to adapt that it would be hazardous to peer much into the future. One can speculate, of course. One can make an inspired guess, for example, that the world food shortage is going to last for sometime, whilst the industrial depression overtaking the rich countries is going to last sometime. Economic maximization on the part of Thailand should then be to specialize further in food production in which we are now already quite good and retreat temporarily from industrial production. Or one can argue that since the world has more or less gone crazy, the natural response would be for the country to insulate oneself as much from the general bedlam by becoming as autarkic as practicable. All these would be mere speculations. Thailand, like practically all other countries in the world, is now at the crossroads. Unlike most other countries however, she still has a few options open. This is fortunate for Thailand, but it makes any forecasts very hazardous.

III. DISTRIBUTION

A. The Overall Picture

It would be nice to follow the above account of growth with a parallel account of the changes in distribution accompanying the growth within the economy. Unfortunately, the data basis for such an account is non-existent. There do exist time-series data for gross *domestic* product originating in the four regions of Thailand, from which it would be unwise to conclude too much, first, because the concept used is "gross *domestic* product", the fact that quite a good deal of income generated within the outlying regions are transferred to Bangkok which owns much of the resources in these regions would render this concept useless; secondly because the data are too aggregative, as will be shown, rural-urban differences are substantial in Thailand, and income figures which combine rural and urban areas are apt to be misleading.

In a sense, this data situation reflects very well the preoccupation of the authorities in the 1960's. Governments become worried about income distribution only when there are violent protests against the *status quo*. The violence of the 1960's was regional violence. Hence the data available for the 1960's were largely regional data.

The National Statistical Office conducted Household Expenditure Surveys in 1963/4, 1968/9 and 1971/3. Apart from the published figures for 1963/4 which are inadequate for analysis, there is not enough information for us to make appropriate adjustments to obtain correct income figures. But with the 1968/9 we have the good fortune to have the calculations of Dr. Oey Astra Meesook of Thammasat University available for us. Dr. Oey has done the major adjustments, particularly for income in kind, necessary to get as close to the ideal concept of income as possible. These figures are now presented in Table V.^{23/}

These numbers throw a completely different light on distributional problems in Thailand. It has long been known that the great divide in Thai society has been between town and country, the data of Table V amply confirms this. What is less known is that regional inequality is derived largely from the different degrees of urbanization—there being relatively small variations among villages in different regions, and among towns in different regions. The Central Region in general, but Bangkok in particular, is an exception to this rule.

^{23/} While Dr. Oey should receive credit for the vast amount of labour devoted to compile, adjust and generally make sense of the data, she should not be in any way held culpable for the interpretations that are presented in this paper.

TABLE V
 Mean Income in Various Regions in Thailand 1968/69
 (Mean for Thailand = 100)

	Towns	Villages	Region Average
Bangkok	268	180	247
Central	200	119	126
South	193	67	83
North	172	75	81
Northeast	218	72	77
All Towns and Villages			100

Source: Socio-Economic Survey 1967/8. Data were adjusted by Dr. Oey Astra Meesook to reflect income figures.

With this de-emphasis of regional inequality, therefore, our main task is therefore to concentrate on the causes of rural/urban differences, which will be our problem now.

B. Causes of Income Disparities

There are many possible causes of rural/urban differences in income at the moment we can only guess at the causes. Much research still needs to be done before more definite answers would emerge.

The first reason would have to be government policies which tend to twist the terms of trade between rural and urban sectors, since this features very importantly in postwar economic debates in Thailand. Usually the argument revolves around the rice export tax, which not only generates government revenues, but also depresses urban rice prices domestically.^{24/} Now rice can be considered as the wage-good in Thailand. This of course keeps urban wages down, which raise the profit rate in the "capitalist" or "modern" or "urban" sector. This would thus tend to push mean income in the urban sector upwards. Apart from the rice export tax, the structure of taxation in Thailand is very heavily dependent on indirect taxes. This suggests regressivity. A few studies that have been done (mostly unpublished) seem to bear this out. *Prima facie*, there is thus an argument that the rural sector bears much of the burden of taxes other than the rice export tax as well.

Regressive taxation may supply part of the answer to the problem of explaining rural/urban differences, but I do not think that it is sufficient. Geographical mobility in Thailand is fairly high, particularly in recent years. This wide rural/urban gap thus promptly raises the question: Why is there not a sufficient migration from low-income rural areas to the high-income urban areas, to wipe out or at least to narrow substantially this gap?

The answer is probably that the structure of labour demand is heavily biased towards higher occupations, on account of the particular pattern of industrialization. This tends to mean that there is a relatively small flow of low-skill labour from the countryside into the towns, which would pull the urban wages down.

But this moves the argument back one step, because for the occupational structure to exert a powerful influence on average income, it must mean also that the occupational

^{24/} The issues are summarised in Ammar Siamwalla, "A History of Rice Price Policies in Thailand", in Part 4 of this Volume.

wage differentials themselves must also be large, which happens to be also true, at least as observed somewhat casually. The next question then is: why are occupational wage differentials so large?

The answer to this last question must, I think, be sought on the supply side, specifically in the educational system, which has been heavily discriminatory in its effects. The principal feature of this discriminatory policy is, as is common in many other countries, the policy to subsidise tertiary education which has the main effect of much poorer standards in primary education particularly in the rural areas.

But, some reader may raise the question that such a policy may tend to push up the supply of the higher-skilled and therefore would narrow the wage advantage that these people might earn. The reply to this would be that because the number of people who can finish secondary education has been kept limited and those who can enter the secondary stream even more limited by such policies. Indeed, for many years the size of university enrolment has been kept down, as universities try to raise standards by limiting entrance. The number of people who have the privilege of enjoying university education is thus quite small, whilst the money expended on them was disproportionately large. This is what widens the rural/urban income gap.

There is evidence however that these trends are beginning to reverse themselves. Graduate unemployment is becoming a serious problem whilst at the same time the government, having been under intense pressure to raise the size of enrolment is now increasing the graduate output tremendously. It is possible that these may exert some downward pressure on the relative income of the educated. Distributionally, this probably has some equalizing effects, but whether it is politically or socially desirable is another question.

Past policies have thus had extremely adverse effects, with rural education being very largely neglected and urban sector overly favoured. This situation is further compounded by the well-known phenomenon of brain drain. Even if there were the rare rural boy who "made good" via the educational system, chances are that he would migrate into city, rather than try to improve his situation within the rural area.

Such is the situation with the distribution of "human capital" as it affects income distribution, the same applies to the distribution of physical capital. Again there are many government policies which tend to strengthen the already quite uneven distribution of physical capital. Much of the government efforts to promote industrialization has been of this nature. Owners of capital have been persuaded to invest in various industries by extraordinarily high rates of return which are more or less the fruit of the protective policies of the government. It can be said, I think without exaggeration, that none of the benefits of the industrialization programme has trickled down to the low-income families.

As in the case of human capital, there is a tendency for that part of non-human capital which is generated within the rural sector to be drained into the towns, the commercial banks being in this case the main conduit, as discussed in Chapter 2.

These are some causes, or rather, some hypotheses about the causes of income inequality. It has highlighted the government policies which tend to accentuate the inequality, this is because the fact that much of its traditional hierarchy was almost totally dissolved by the century of free trade or at least was substantially shaken, and also from the fact that it has until very recently always had land surplus, Thailand has it in her to become one of the most egalitarian societies in Asia. That it is not, I

believe, is a matter of poor policy design. I shall not go into the question of why this poor design come about, because I feel a Marxist, which I am not, is better equipped to answer this question.

IV. CONCLUDING REMARKS

This survey of the three aspects by which most economies are judged, i.e. the stability, growth and distribution aspects, has covered them in somewhat unequal lengths. Roughly the proportions are 2 : 3 : 1, and the last chapter has been factually somewhat thin and speculations has flowed thick and fast.

Clearly, this is not an arrangement which reflects the relative importance of the subjects. It would have been better if the apportionment has been more according to your needs rather than my ability. It would have been better if the proportions devoted to stability, growth and distribution were 1 : 2 : 3 with the last having the most meaty sections. It would have been better if some of the many dogmatic sections were replaced by a more cogent and more factually-based demonstrations. For such improvements to be made, however, not only does this speaker have to be replaced, but also more studies should be made into the structure of the Thai economy, more data would have to be collected, more acceptance of the idea that proper policies can only be based on proper knowledge of the way the economy functions, and not on some dogmas picked up in one's youth. But then, if these changes do come to pass, Thailand would no longer be an under-developed country.

Part 3

Finance

3

THAILAND'S FINANCIAL INSTITUTIONS: BRIEF DESCRIPTION AND A COMPARATIVE ANALYSIS of THEIR ROLES IN MOBILIZING SAVINGS and PROVIDING CREDIT*

Paiboon Wattanasiritham

I. INTRODUCTION

It can be generally stated that the role played by financial institutions in Thailand's economy has been increasing significantly both in terms of magnitude and in terms of sophistication. The purpose of this paper is to give a brief description of the more important financial institutions in Thailand, and then to bring together data on household saving mobilized, and credit provided, by the various categories of financial institutions in a comparative manner. In compiling these data, there are several cases where the required information is not available in full, hence the need to work out estimates. While such estimates cannot, and must not, be taken as actual figures, they should be sufficiently useful for comparative purposes and for broadly indicating magnitudes and trends.

II. THAILAND'S FINANCIAL INSTITUTIONS IN BRIEF

(See also Tables 2 and 3)

The unorganized financial market

The Thai financial system may be divided into the "organized" and the "unorganized" sectors. The latter refers to all the financial transactions which do not go through organized and legally registered financial institutions. These transactions include lendings by private money-lenders, operations of the so-called "pia huey" or "rotating credit societies", saving with and borrowing from private, non-registered credit unions, borrowing and lending between private persons in general, etc.. While no data on financial transactions in the "unorganized financial market" are available, it can be said in general that this market is quite large and plays a not insignificant role, especially in rural areas. According to a rural credit survey carried out in 1971 by the Ministry of Agriculture and Cooperatives, for example, over 80% of farm credit emanated from noninstitutional sources, i.e., from the unorganized financial market.

Commercial banks

The organized sector of the financial system comprises those financial institutions which have legal entity of one form or another. In this sector commercial banks are by far the most important group. At the end of 1973, of all the household savings mobilized, credit extended, and total assets held, by all financial institutions put together,

* The writer is indebted to the staff of the Financial Institutions Section, Department of Economic Research, Bank of Thailand, for their valuable assistance in the compilation of data presented in this paper. The interpretation of these data, however, is solely the responsibility of the writer.

commercial banks as a group contributed to 72.8%, 75.7%, and 72.0% respectively. Commercial banking first came to Thailand in 1888 with the opening of a foreign bank's branch. The first Thai bank was set up in 1906, and for a period of time Thai banks played a minor role vis-a-vis foreign banks. As time went on, however, Thai banks grew rapidly both in size and in influence. Presently there are 16 Thai banks which at the end of 1973 had between them 759 branches, including 15 branches overseas, compared with 19 branches of 13 foreign banks. Furthermore, Thai banks now clearly dominate the commercial banking business, accounting for 94.0% of deposits, 89.5% of advances, and 91.1% of total assets of all commercial banks put together.

Commercial banks obtain funds by accepting demand, savings and time deposits and through borrowings. They finance mainly trade and businesses but also industry, agriculture, housing and consumption. They are regulated under the Commercial Banking Act of 1962, with the Ministry of Finance and the Bank of Thailand as regulatory agencies.

Finance companies and the Government Savings Bank

Financial institutions whose sizes are anywhere near that of commercial banks are "finance companies" and the Government Savings Bank. The term "finance companies" in Thailand refers to those companies which borrow funds from the public through the issuance of promissory notes or other similar instruments and lend those funds to businesses, individuals, etc.. They may not accept deposits or issue cheques. Finance companies are a relatively new type of institutions in Thailand, dating back to only around 1969, but have grown very rapidly. The establishment and operations of finance companies have to conform to the National Executive Council Announcement No. 58 issued in 1972, and they, like commercial banks, are regulated by the Ministry of Finance and the Bank of Thailand.

The Government Savings Bank, as the name suggests, is government-owned. It is the only savings bank in the country and operates with a nation-wide network of branches. The GSB was set up by the Government Savings Bank Act of 1946 and is a self-governing body under general guidance of the Ministry of Finance.

Life insurance companies, agricultural cooperatives and savings cooperatives

Various categories of other financial institutions are worthy of note, namely, life insurance companies, agricultural cooperatives, savings cooperatives, pawnshops and credit foncier companies. Life insurance companies have been operating in Thailand since 1929 but they have grown rather slowly, partly due to the failure in 1962 of the then largest life insurance company and of another company in 1968. Life insurance business is regulated under the Life Insurance Act of 1967 with the Ministry of Commerce as the regulatory agency.

Agricultural cooperatives are set up by groups of farmers with the purpose, among others, of making credit available to members. Savings Cooperatives are similar to agricultural cooperatives in their set-up and their objectives. They, however, belong to the urban rather than rural sector and are organized principally by employees of public institutions such as schools and Government agencies. Their basic function is one of collecting savings from, and making loans to, members. The establishment, organization and operations of both the agricultural cooperatives and the savings cooperatives are in accordance with the Cooperatives Act of 1968 and they both come under the supervision of the Ministry of Agriculture and Cooperatives.

Pawnshops and credit foncier companies

Pawnshops are small businesses which lend money to individuals against a variety of articles such as necklaces, watches, television sets, trousers, etc., which are "pawned" with them. There are three categories of pawnshops: those operated by private businessmen (in the form of companies, partnerships or one-man businesses), those run by the Department of Public Welfare, and those run by municipalities. Pawnshops operate under the Pawnshop Act of 1962 and are supervised by the Ministry of Interior.

Credit foncier companies are companies which provide housing and real estate finance in the form of mortgage lending, hire-purchase financing, or purchase with the seller's right of redemption. Credit foncier companies, as distinct from finance companies, may not mobilize funds from the public. They operate under the National Executive Council Announcement No. 58 issued in 1972 and are regulated by the Ministry of Finance.

Specialized financial institutions

In addition to all the financial institutions mentioned above, Thailand has a number of specialized financial institutions which have been set up by special legislation in order to cater for the financing needs of certain sectors in the economy. These are:—

1) The Bank for Agriculture and Agricultural Cooperatives. Set up in 1966 by the Bank for Agriculture and Agricultural Cooperatives Act, the BAAC took over the assets and functions of the Bank for Cooperatives which had been in existence since 1947. The BAAC lends money to farmers either directly or through farmer groups and agricultural cooperatives. It has a network of branches throughout the country.

2) The Industrial Finance Corporation of Thailand. Although established by special legislation (the Industrial Finance Corporation of Thailand Act of 1959), the IFCT is owned by private interests and functions as a private institution along the lines of a development finance company or a development bank. Among its objectives are the provision of medium and long term credit to industry, assisting in the establishment of new industrial enterprises, and encouraging the development of the capital market.

3) The Government Housing Bank. This was set up in 1953 by the Government Housing Bank Act. Its main purpose is to provide housing finance. The GHB was also active in providing houses and land to medium-income groups under long-term installment schemes up to the beginning of 1973 when such function was transferred to the newly created National Housing Authority.

4) The Small Industries Finance Office. SIFO is not a juristic entity but an office in the Department of Industrial Promotion of the Ministry of Industry. The principal objective of SIFO is to provide financial and technical assistance to small industrial enterprises including cottage and handicraft industries. It does not grant loans directly but through joint operations with the Krung Thai Bank which is a government-owned commercial bank. SIFO has been operating since 1964.

III. MOBILIZATION OF HOUSEHOLD SAVINGS BY FINANCIAL INSTITUTIONS***Concepts and definitions***

In performing the function of intermediaries, financial institutions mobilize funds from surplus units and channel them to deficit units in the form of loans, overdrafts, discounts, etc.. Surplus units in this sense may be the government, government enterprises,

corporations, private non-profit institutions or individuals. Generally speaking, however, the first three categories (the government, government enterprises, and corporations), taken as a group, are usually net deficit units which need financing from outside the group. The last two categories, on the other hand—again taken as a group—are normally net surplus units whose savings can be mobilized for use by those seeking finance. In studying the role of financial institutions as mobilizers of savings, therefore, only savings of individuals and private non-profit institutions are taken into account. The term “households” is loosely used throughout this paper to represent these two categories of savers.

For commercial banks data are available in the Bank of Thailand showing a breakdown of bank deposits into different categories of depositors so that deposits held by individuals and private non-profit institutions can be singled out. In the case of funds placed with finance companies, the breakdown is only in terms of individuals and juristic persons, hence household savings through finance companies do not include savings of private non-profit institutions.

Saving through life insurance companies takes the form of life insurance premiums paid to the companies at the agreed intervals. Life insurance companies in turn allot part of these premiums as “life insurance reserves”, or the calculated amounts which are likely to be required for making benefit payments in the future. These life insurance reserves are therefore taken as outstanding amounts of savings placed with life insurance companies.

Saving through agricultural cooperatives and savings cooperatives takes two forms: first, contributions to the share capital of the co-operatives and, secondly, deposits placed with those cooperatives. Hence savings mobilized by these two types of cooperatives are defined as capital accounts plus deposits.

Pawnshops, credit foncier companies, the Industrial Finance Corporation of Thailand, and the Small Industries Finance Office do not have the function of mobilizing household savings. The Government Housing Bank did not collect any deposits until the beginning of 1974, and so far only a small amount of deposits has been placed with it.

The Government Savings Bank offers savings outlets to the general public in a variety of forms. Included in the category of household savings are all savings deposits with the Savings Department, personal deposits with the Banking Department, all holdings of savings bonds and premium savings certificates, and all the life insurance funds. It is assumed that all savings, apart from deposits with the Banking Department, belong to individuals or private non-profit institutions.

Savings with the Bank for Agriculture and Agricultural Cooperatives take the form of savings and time deposits. The BAAC has a report showing a breakdown of these deposits into different categories according to holders, hence deposits of individuals and private non-profit institutions can be separated from other deposits.

Summary of findings

In finding out the relative role played by each category of financial institutions in the mobilization of household savings, the following analyses are carried out:—

- 1) A time series of outstanding amounts of household savings held at each category of financial institutions as percentage shares of total (Table 5);

2) A time series of growth rates of outstanding amounts of household savings held at each category of financial institutions (Table 7);

3) A time series of the annual increases of household (financial) savings held at each category of financial institutions as percentages of total saving of households (Table 8). (Data on total saving of households are taken from national income accounts compiled by the National Economic and Social Development Board. As defined earlier, saving of households includes also saving of private non-profit institutions.)

The results of the above-mentioned analyses can be summarized as follows:—

1) *With regard to the outstanding amounts of household savings as percentage shares of total.* (See also Tables 4 and 5)

The analysis shows quite clearly the dominance of commercial banks in the mobilization of household savings vis-a-vis other financial institutions. Throughout the period 1963-1973 the percentage share of outstanding savings of households held at commercial banks never fell below 69.2% and went as high as 74.6% at the end of 1971 and 1972. At the end of 1973 this percentage share dropped somewhat to 72.8%, due to the rise in household savings mobilized by finance companies. The case of finance companies is a notable one. In a short period of 5 years since their emergence in 1969, their percentage share of outstanding savings grew from 0.5% of total at the end of that year to 5.5% of total at the end of 1973. Their ranking, however, is still behind that of the Government Savings Bank which comes second to the commercial banks. Finance companies have also overtaken life insurance companies as outlets for household savings. Both the Government Savings Bank and life insurance companies have, over the years, had their shares reduced, as have also savings cooperatives and agricultural cooperatives. The share of household savings held at the Bank for Agriculture and Agricultural Cooperatives is still very small, but this share has been on the increase every year, from 0.1% at the end of 1963 to 0.5% at the end of 1973.

The rankings of financial institutions in terms of percentage shares of outstanding household savings appear below :

Simple average 1963–1973 (except where otherwise indicated)

1. Commercial banks	72.2%
2. Government Savings Bank	20.2%
3. Life insurance companies	3.0%
4. Finance companies (1969–73)	2.5%
5. Savings cooperatives	1.9%
6. Agricultural cooperatives	1.3%
7. BAAC	0.2%
<i>All institutions</i>	<u>100.0%</u>

At the end of 1973

1. Commercial banks	72.8%
2. Government Savings Bank	16.3%
3. Finance companies	5.5%
4. Life insurance companies	2.3%
5. Savings cooperatives	1.6%
6. Agricultural cooperatives	1.0%
7. BAAC	0.5%
<i>All institutions</i>	<u>100.0%</u>

- 2) *With regard to the growth rates of outstanding amounts of household savings.*
(See also Tables 4 and 7)

Financial institutions which register the highest growth rates of outstanding household savings are the finance companies with rates as high as 156.7% in 1971, and even in 1973, when their growth slowed down somewhat, the rate was still very high, i.e., 91.5%. It should be borne in mind, however, that finance companies started from a low base. Next in terms of high rates of growth, though not as remarkable as finance companies, is the Bank for Agriculture and Agricultural Cooperatives, but this has been the case only from 1967 onward, and it started from an even lower base than finance companies. Moreover, as already shown, the outstanding amounts of household savings for the BAAC have never been significant compared with other financial institutions. The growth rates for commercial banks have been quite steady, averaging 21.5% for the period 1964–1973. Also fairly steady, though at lower levels than in the case of commercial banks, are the growth rates for agricultural cooperatives and savings cooperatives. Life insurance companies experienced setbacks in 1964 and 1968, principally as a result of failures as noted earlier. From 1969 onward, life insurance business picked up again, and in 1973 household savings held with life insurance companies grew at a fairly good rate of 21.8%. The Government Savings Bank has been quite successful in mobilizing savings from the general public. The growth rates for the GSB have been relatively high except for the years 1968–1971 when they declined somewhat. In 1972 the GSB revised upward interest rates on its deposits so as to make them comparable to those offered by commercial banks. As a result, household savings held with the GSB grew once again at a fairly high rate, reaching 21.5% in 1972 and 26.2% in 1973.

Given below are the order of financial institutions in terms of the growth rates of household savings held with them:

Simple average 1964–1973 (except where otherwise indicated)

1. Finance companies (1970–73)	131.3%
2. BAAC	49.5%
3. Commercial banks	21.5%
4. Government Savings Bank	19.6%
5. Savings cooperatives	19.1%
6. Life insurance companies	16.6%
7. Agricultural cooperatives	<u>13.6%</u>
<i>All institutions</i>	<u>21.4%</u>

Growth in 1973

1. Finance companies	91.5%
2. BAAC	39.8%
3. Government Savings Bank	26.2%
4. Commercial banks	22.2%
5. Life insurance companies	21.8%
6. Agricultural cooperatives	21.1%
7. Savings cooperatives	<u>17.8%</u>
<i>All institutions</i>	<u>25.3%</u>

3) *With regard to annual increases of household (financial) savings as percentages of total saving of households* (See also Tables 6 and 8)

The purpose of this analysis is to observe the degree to which households save through financial institutions as opposed to saving by other means. The figures show what percentage of the yearly saving of households is in the form of additional (financial) savings at each category of financial institutions. On the basis of such analysis, commercial banks again are by far the most important group in the yearly mobilization of additional financial savings. Second in rating but some way behind is the Government Savings Bank, followed relatively closely by finance companies. Other categories of financial institutions all contribute to a rather small part in the overall yearly mobilization of additional financial savings.

The ratings in terms of what has been described above are given as follow:—

Simple average 1964–1973 (except where otherwise indicated)

1. Commercial banks	23.0%
2. Government Savings Bank	5.6%
3. Finance companies (1970–73)	3.6%
4. Life insurance companies	0.6%
5. Savings cooperatives	0.6%
6. Agricultural cooperatives	0.3%
7. BAAC	<u>0.2%</u>
<i>All institutions</i>	<u>32.4%</u>

1973 only

1. Commercial banks	31.1%
2. Government Savings Bank	8.0%
3. Finance companies	6.1%
4. Life insurance companies	1.0%
5. Savings cooperatives	0.6%
6. Agricultural cooperatives	0.4%
7. BAAC	<u>0.3%</u>
<i>All institutions</i>	<u>47.5%</u>

IV. PROVISION OF CREDIT BY FINANCIAL INSTITUTIONS

Concepts and definitions

The usefulness of financial institutions would be very limited if they did not provide credit to businesses, trade, industry, agriculture, individuals, etc.. Hence it is interesting to see how much credit has been made available by each category of financial institutions. The term "credit" as used here covers loans, overdrafts, advances, discounts, purchases of receivables, etc.. In the figures for commercial banks, inter-bank deposits and loans are excluded. Apart from this, however, the amounts of credit as presented here are in gross terms in the sense that they include also credit extended by one financial institution to another. Notable among such transactions are loans made by commercial banks to finance companies and loans granted by the Bank for Agriculture and Agricultural Cooperatives to agricultural cooperatives.

The foregoing clarification having been made, the various tables regarding credit provided by each category of financial institutions should be adequate at least for comparative purposes.

Summary of findings

In making comparison among different categories of financial institutions in terms of credit provided by them, the approach adopted is similar to that used in the section dealing with the mobilization of household savings. In other words, the following data are worked out:—

1) A time series of outstanding amounts of credit extended by each category of financial institutions as percentage shares of total (Table 10);

2) A time series of growth rates of outstanding credit extended by each category of financial institutions (Table 12);

3) A time series of annual increases of credit extended by each category of financial institutions as percentages of gross private investment (Table 13). (Data on gross private investment are taken from national expenditure accounts compiled by the National Economic and Social Development Board. Gross private investment for this purpose is taken to incorporate private gross fixed capital formation and change in stocks. The latter is assumed to represent only change in stocks for the private sector.)

The results of the above exercises can be summarized as follows:—

1) *With regard to outstanding amounts of credit as percentage shares of total.*
(See also Tables 9 and 10)

From the data it is quite clear that commercial banks are way ahead as the most important source of institutional credit, providing between a low of 75.4% and a high of 84.3% of total credit extended by all financial institutions between 1969 and 1973. It is interesting to note, however, that the share of credit provided by commercial banks fell every year from 84.3% at the end of 1969 to 75.4% at the end of 1973. This fall coincided with a steep rise in the share of credit extended by finance companies which come second as a principal source of institutional credit. Finance companies' share rose every year from only 1.9% at the end 1969 to 14.6% at the end of 1973. None of the other financial institutions appears really significant as far as the magnitudes of their lendings are concerned, with the exception, perhaps, of the Bank for Agriculture and Agricultural Cooperatives whose share has been fairly steady at 3.6% and 3.7% between 1969 and 1972 although it dropped to 2.9% at the end of 1973.

The rankings of financial institutions in terms of the shares of credit provided appear below:—

Simple average 1969–1973 (except where otherwise indicated)

1. Commercial banks	80.2 %
2. Finance companies	7.0 %
3. BAAC	3.5 %
4. Agricultural cooperatives	2.0 %
5. Savings cooperatives	1.5 %
6. Pawnshops	1.5 %
7. Industrial Finance Corporation of Thailand	1.3 %
8. Life insurance companies	1.2 %
9. Government Savings Bank	0.9 %
10. Government Housing Bank	0.4 %
11. Credit foncier companies (1973)	0.3 %
12. Small Industries Finance Office	0.2 %
<i>All institutions</i>	<u>100.0 %</u>

At the end of 1973

1. Commercial banks	75.4 %
2. Finance companies	14.6 %
3. BAAC	2.9 %
4. Agricultural cooperatives	1.9 %
5. Savings cooperatives	1.3 %
6. Life insurance companies	1.0 %
7. Pawnshops	1.0 %
8. Industrial Finance Corporation of Thailand	1.0 %
9. Government Savings Bank	0.5 %
10. Credit foncier companies	0.3 %
11. Small Industries Finance Office	0.1 %
12. Government Housing Bank	0.04 %
<i>All institutions</i>	<u>100.0 %</u>

2) *With respect to growth rates of outstanding credit.* (See also Tables 9 and 12)

As can be expected, the fastest growth rates belong to finance companies, registering 59.6% in 1970, rising to the highest rate of 156.7% in 1971, and then coming down slightly to still very high rates of 144.2% and 88.1% in 1972 and 1973 respectively. Financial institutions with steady and fairly high growth rates are commercial banks, life insurance companies, agricultural cooperatives, and savings cooperatives. Credit extended by pawnshops has not grown very fast, the growth rates being between 2.5% and 6.8% during 1970 and 1973 although in 1969 the rate was 15.3%. The Government Savings Bank has not been encouraged to make loans to the private sector and has put most of its funds into government securities. Hence the GSB has actually reduced its loan portfolios in most of the years between 1964 and 1973. The Government Housing Bank is another institution with declining amounts of outstanding loans in some of the years especially in 1973 when part of its assets was transferred to the National Housing Authority. The Bank of Agriculture and Agricultural Cooperatives experienced negative growth rates in 1964 through 1966 during which period it was still the Bank for Cooperatives (The BAAC was created in 1966 to take over the functions and assets of the Bank for Cooperatives). From 1967 onward, however, its growth rates were quite high although the rate dropped somewhat in 1973. Growth rates for the Industrial Finance Corporation of Thailand were not very steady but nevertheless were quite high also, although its growth rate also dropped somewhat in 1973. As for the Small Industries Finance Office, credit extended was very small to begin with, and although in the beginning (1965–1969) very high growth rates were registered, from 1970 to 1973 its growth became almost stagnant.

Given below is the order of financial institutions in terms of the growth rates of outstanding credit:—

Simple average 1964–1973 (except where otherwise indicated)

1. Finance companies (1970–1973)	112.2 %
2. Small Industries Finance Office (1965–73)	106.9 %
3. Industrial Finance Corporation of Thailand	27.5 %
4. BAAC	27.2 %
5. Savings cooperatives (1968–73)	21.5 %
6. Agricultural cooperatives (1968–73)	20.2 %
7. Commercial banks	19.4 %
8. Life insurance companies (1968–73)	17.7 %
9. Pawnshops (1969–73)	6.7 %
10. Government Housing Bank	– 4.6 %
11. Government Savings Bank	– 9.8 %
<i>All institutions (1970–1973)</i>	<u>25.6 %</u>

Growth in 1973

1. Finance companies	88.1 %
2. Commercial banks	43.6 %
3. Agricultural cooperatives	24.3 %
4. Savings cooperatives	17.6 %
5. BAAC	12.4 %
6. Life insurance companies	12.1 %
7. Industrial Finance Corporation of Thailand	9.0 %
8. Pawnshops	4.4 %
9. Small Industries Finance Office	0.3 %
10. Government Savings Bank	- 13.4 %
11. Government Housing Bank	- 73.9 %
<i>All institutions</i>	<u>44.9 %</u>

3) *With regard to annual increases of credit as percentages of gross private investment.* (See also Tables 11 and 13)

This analysis shows how much additional credit has been made available by each category of financial institutions. For comparative purposes, such annual increases are expressed in terms of percentages of gross private investment much of which is normally financed by credit obtained from financial institutions.

Again, as to be expected, commercial banks and finance companies are the two major sources of additional financing which is required each year. The Bank for Agriculture and Agricultural Cooperatives has contributed in the region of 1% of gross private investment between 1967 and 1973 although this share has been declining slightly over the years. All other financial institutions appear to be insignificant in so far as providing additional finance is concerned.

The ratings of financial institutions on the basis of annual increases of credit, expressed as percentages of gross private investment, appear as follows:—

Simple average 1964–1973 (except where otherwise indicated)

1. Commercial banks	19.2%
2. Finance companies (1970-1973)	8.7%
3. BAAC	0.7%
4. Agricultural cooperatives (1968-73)	0.6%
5. Savings cooperatives (1968-73)	0.4%
6. Life insurance companies (1968-73)	0.3%
7. Industrial Finance Corporation of Thailand	0.3%
8. Pawnshops (1969-73)	0.2%
9. Small Industries Finance Office (1965-73)	0.05%
10. Government Housing Bank	- 0.004%
11. Government Savings Bank	- 0.3%
<i>All institutions (1970-1973)</i>	<u>36.9%</u>

1973 only

1. Commercial banks	51.4%
2. Finance companies	15.4%
3. Agricultural cooperatives	0.8%
4. BAAC	0.7%
5. Savings cooperatives	0.4%
6. Industrial Finance Corporation of Thailand	0.2%
7. Life insurance companies	0.2%
8. Pawnshops (1969-73)	0.1%
9. Small Industries Finance Office	0.001%
10. Government Savings Bank	- 0.2%
11. Government Housing Bank	- 0.3%
<i>All institutions</i>	<u>68.8%</u>

V. CONCLUSIONS AND OBSERVATIONS

On the different bases of comparison as presented above, the rankings of financial institutions in Thailand have been put together in Table 14. From this table, as well as from the foregoing description and analyses, a number of conclusions and observations are offered as follows:-

A. With respect to each category of financial institutions.

1) Commercial banks have shown clear dominance among all financial institutions throughout the period under review. There is no indication that this picture will change significantly in the foreseeable future, except the possibility that finance companies may take away some of the business hitherto belonging to commercial banks. Such erosion of the commercial banks' role, however, is not likely to be very great. In any case, to the extent that finance companies' operations help businesses and incomes to expand, commercial banks should also benefit. The other observation that may be forwarded is that commercial banks have proved consistently effective in both the mobilization of household savings and the provision of credit. There appears therefore to be a good reason to encourage further expansion of commercial banks not only in their traditional operations but also in new areas. In other words, commercial banks, due to their effectiveness as financial intermediaries, should be encouraged to become more of the all-purpose type of financial institutions. The rapid growth of finance companies should be a clear indication that the Thai financial markets are far from being saturated, and there are still demands for more financial services both in terms of absolute amounts and in terms of variety.

2) Finance companies have displayed the greatest degree of dynamism compared with all other financial institutions. Among other things, this implies that official policies as regards financial institutions have been too restrictive. A lid, as it were, has been placed on the capacity of financial institutions as a whole to expand and develop. This has been brought about as a result of a variety of measures, for example, a tight restriction on new entry of banks and to a lesser degree on the opening of bank branches, a rigid control on interest rate applicable to practically all types of financial institutions, the official tendency to lay down a narrow and rigid framework within which financial institutions must operate, and so on. Therefore, if financial institutions as a whole are to expand and develop with dynamism and versatility in order to better and

more adequately serve the needs of the economy, then it appears that a more liberal approach on the part of the government is needed.

3) Life insurance companies as a rule could become an important institution in the mobilization of long-term savings which could then be channelled into productive, long-term investments. In Thailand this has not been the case and is not likely to be so in the near future. Part of the explanation must undoubtedly be the past failures of life insurance companies, but there may have been other factors also, such as too rigid a control on their operations, lack of effective promotion efforts, inadequate training of personnel, etc.. In any event, a fresh enquiry into the life insurance industry seems to be warranted, considering their relatively slow growth and relatively minor role in the financial system as evident from this study.

4) Agricultural cooperatives appear to be fairly important in the provision of credit but play a relatively lesser role in the mobilization of household savings. In so far as agricultural and rural development is concerned, agricultural cooperatives can serve as very effective institutions, hence the desirability of their rapid and steady growth. What may be considered in terms of policy, therefore, is how to promote the role of agricultural cooperatives in the mobilization of savings, especially from the agricultural sector itself, so as to give them a sound funding base while encouraging thrift among farmers, which in itself is desirable and very useful for economic growth as a whole and for agricultural development in particular.

5) Savings cooperatives in Thailand perform practically the same function as credit unions in other countries. As such they have been quite successful. They are able to be completely self-supporting. They encourage thrift, make loans available to members at relatively low costs, and promote cooperative efforts among groups of people. There is therefore very good reason for actively promoting the establishment and expansion of savings cooperatives in the various sectors of the Thai society. Like agricultural cooperatives, their steady growth in rural areas should prove very beneficial.

6) Pawnshops have been referred to as the poor man's banks. In Thailand they have not grown very rapidly. This may be a good sign that the number of poor people has declined over the years. Still, as long as there is a need for the services of pawnshops, improvements should be sought after with respect to their set-up and their operations. From the study, it can be observed that pawnshops do not collect any savings. Should this be the case? Might not their ability to mobilize funds from the public, plus their capacity to open branches, enable them to reduce charges to their customers? Questions such as these should be worthy of consideration.

7) Credit foncier companies are new-comers on the Thai financial scene and are still of very modest sizes, hence it is too early to evaluate or consider their performance. One point may be made, however, that there does not appear to be a sound argument for prohibiting credit foncier companies from mobilizing savings from the public. Indeed the contrary would seem much more logical since these companies are engaged in long-term housing finance. It should be worthwhile, therefore, to permit credit foncier companies to collect savings from the public, particularly from their would-be borrowers. One might even go further to suggest that Thailand needs institutions such as building societies or savings and loans associations, and either credit foncier companies should be transformed into such institutions or new institutions of a similar nature should be promoted.

8) The Government Savings Bank has done well in mobilizing household savings, but, on the other hand, their role in providing credit is negligible. Considering their huge resources and their contact with a large number of the populace throughout the country, confining their uses of funds almost wholly to investment in government securities does not appear to be a very productive practice. As a saving bank, naturally, safety is an important consideration. Nevertheless, there should be a number of areas in which the Government Savings Bank can venture into without taking an undue risk.

9) The Bank for Agriculture and Agricultural Cooperatives has contributed a fairly significant share in the total credit made available by all financial institutions. This is encouraging considering that all of its credit goes to the agricultural sector. With regard to savings mobilization, however, although the BAAC has apparently been making greater efforts in recently years, the total volume of savings mobilized from households still remains very small. Such efforts, therefore, should be strengthened further.

10) The Industrial Finance Corporation of Thailand, like the BAAC, has had a fairly good record as far as providing credit is concerned, but it has done nothing in the area of savings mobilization. While recognizing the fact that so far the IFCT has been able to obtain large amounts of long-term, relatively low-cost, funds from overseas, developing a funding base among the Thai public should be desirable in the long run, especially if the IFCT is to expand further its role as a major source of industrial financing.

11) Among all the financial institutions under review, the Government Housing Bank has been the one with negative expansion. Even taking into account the transfer of part of its assets to the National Housing Authority in February 1973, such negative expansion is hardly desirable. Indeed it is indicative of some serious problems that need looking into. As a housing bank, mobilization of household savings should be an important aspect of the GHB's operations, yet it has collected no such savings at all throughout the period 1963-1973. This feature has of course been changed with the acceptance of deposits by the GHB from the beginning of 1974, but this does not mean to say that the problems of funding will automatically be solved. In any case, the volume of credit extended by the GHB has been so low and, to say the least, so stagnant that the justification for its existence becomes questionable unless positive improvements are brought about.

12) The Small Industries Finance Office is another institution whose volume of credit extended has been relatively stagnant during the past few years, while the total outstanding amount is still very small. Considering the importance of small industries in a developing country like Thailand, and noting the fact that SIFO is the only financial institution catering specifically for small industries, such performance does not seem satisfactory. There is also a policy issue worth considering, i.e., should SIFO be turned into a juristic entity as opposed to an office in a Government Department, or should its function and operations be transferred to the Industrial Finance Corporation of Thailand or the Krung Thai Bank? Another question that may be asked is one with regard to funding. Should SIFO completely rely on Government budget allocations and counterpart funds from the Krung Thai Bank, or should it develop an independent funding scheme of its own? These questions should be answered if SIFO is to have a real impact on Thailand's small industries.

B. With respect to the overall financial structure.

Looking at the Thai financial structure as a whole, the major observations may be summed up as follows:-

1) There is a need for an active and comprehensive government policy regarding the country's financial structure. The government should attempt to find out the various characteristics and components which would make the financial structure most effective in serving the needs of the economy and of society.

2) The Thai financial structure seems to be biased towards providing credit with not enough emphasis on mobilization of savings. This should be rectified. Attempts should be made to promote both voluntary and contractual savings, and to promote savings at all types of financial institutions as far as practicable, by adopting a variety of methods and instruments.

3) There appears to be much more room for the expansion of financial services by all categories of financial institutions without undue restriction on their scope of activities. This in turn requires a more liberal, but well thought-out, policy on the part of the government with regard to financial institutions as a whole.

Finally, one would of course be really naive to think that the foregoing description, analysis, and observations are adequate for the purpose of arriving at definite policy decisions. Needless to say, a much more detailed, in-depth and comprehensive study of the working of the Thai financial system should be carried out before policies are formulated.

TABLE I
Thai Economy: Saving and Investment at Current Prices

(Millions of Baht)

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972 ^{1/}	1973 ^{2/}
1. Total population (millions)	29.95	30.97	32.02	33.09	34.20	35.35	36.52	37.73	38.89	40.10	(41.35)
2. Gross domestic product	68,078.6	74,667.3	84,303	101,374.7	108,294	116,774	128,566	135,939	145,340	160,162	(187,681)
3. Saving of households ^{3/}	6,077.4	6,657.6	9,600	15,768	10,992	10,402	13,992	13,872	18,463	20,531	24,708
3.1 As % of GDP	8.9	8.9	11.4	15.6	10.2	8.9	10.9	10.2	12.7	12.8	(13.2)
3.2 Percentage change	- 4.2	9.5	44.2	64.3	- 30.3	- 5.4	34.5	- 0.9	33.1	11.2	(20.3)
4. Gross private investment	10,571.8	10,394.3	11,568.3	17,170.0	17,472	20,316	24,005	23,314	25,004	24,653	(30,201)
4.1 As % of GDP	15.5	13.9	13.7	16.9	16.1	17.4	18.7	17.2	17.2	15.4	(16.1)
4.2 Percentage change		- 1.7	11.3	48.4	1.7	16.3	18.2	- 2.9	7.2	- 1.4	(22.5)

Thailand's financial institutions

^{1/} Preliminary

^{2/} Estimated

^{3/} including private non-profit institutions

Source: National Economic and Social Development Board

TABLE II^{1/}

Salient Features of Financial Institutions in Thailand as at the End of 1973

(Millions of Baht)

Institution	Operations began	No.	Bran-ches	Deposits or equivalent	Borrowings ^{2/}	Household savings mobilized ^{3/}	Capital accounts	Credit extended	Investments	Total assets
1. Commercial banks	1888	29	765	58,372.4	10,040.8	(42,273.5)	5,144.6	51,854.2	15,626.7	78,361.6
2. Finance companies	(1969)	(103)	31	(11,740.1) ^{4/}	—	(3,177.0)	(1,247.7)	(9,933.2)	—	(10,606.6)
3. Life insurance companies	1929	11	142	(1,363.6) ^{5/}	—	(1,363.6)	(79.6)	(645.6)	(340.0)	(1,508.1)
4. Agricultural cooperatives	1916	771	—	(11.6)	(1011.9)	(568.8) ^{6/}	(557.2)	(1,254.9)	(47.8)	(1,628.5)
5. Savings cooperatives	1946	134	—	(37.3)	(8.3)	(952.5) ^{6/}	(915.2)	(864.4)	—	(965.7)
6. Pawnshops	1866	202	—	—	n.a.	—	n.a.	(635.7)	—	(790.5)
7. Credit foncier companies	(1969)	11	—	—	n.a.	—	(57.2)	(228.8)	—	(286.0)
8. Government Savings Bank	1946	1	351 ^{7/}	10,054.7	—	9,472.2 ^{8/}	880.4	323.5	10,770.5	11,666.9
9. BAAC	1966	1	58	367.9	481.2	274.8	1,250.3	1,952.4	—	2,173.7
10. Industrial Finance Corp. of Thailand	1959	1	—	—	533.9	—	205.2	719.6	—	770.1
11. Government Housing Bank ^{9/}	1953	1	—	—	88.0	—	15.8	32.6	—	112.9
12. Small Industries Finance Office ^{9/}	1964	1	—	—	—	—	—	(75.7)	—	—
Total		1,266	1,347	81,947.6	12,164.1	58,082.4	10,353.2	68,520.6	26,785.0	108,870.6

^{1/} Data in Tables 2 through 14 are compiled by the writer with assistance from the staff of the Financial Institutions Section, Department of Economic Research, Bank of Thailand. Figures in parentheses are estimates.

^{2/} Including issuance of debentures.

^{3/} Including savings of private non-profit institutions except in the case of finance companies.

^{4/} All borrowings through the issuance of promissory notes, etc.

^{5/} Life-insurance reserves.

^{6/} Including capital funds which in effect are savings of members of the cooperatives.

^{7/} Including 60 amphur (district) agencies.

^{8/} Including holdings of savings bonds and premium savings certificates.

^{9/} At the end of September 1973.

TABLE III

Salient Features of Financial Institutions : Percentage of Total
as at the end of 1973

Institution	No. of offices	Deposits or equivalent	Borrowings	Household savings mobilized	Capital accounts	Credit extended	Investments	Total assets
1. Commercial banks	30.4	71.2	82.5	(72.8)	49.7	75.7	58.3	72.0
2. Finance companies	5.1	(14.3)	—	(5.5)	(12.0)	(14.5)	—	(9.7)
3. Life insurance companies	5.8	(1.7)	—	(2.3)	(0.8)	(0.9)	(1.3)	(1.4)
4. Agricultural cooperatives	29.5	(0.0)	(8.3)	(1.0)	(5.4)	(1.8)	(0.2)	(1.5)
5. Savings cooperatives	5.1	(0.1)	(0.1)	(1.6)	(8.8)	(1.3)	—	(0.9)
6. Pawnshops	7.7	—	—	—	—	(0.9)	—	(0.7)
7. Credit foncier companies	0.4	—	—	—	(0.6)	(0.3)	—	(0.3)
8. Government Savings Bank	13.5	12.3	—	16.3	8.5	0.5	40.2	10.7
9. BAAC	2.3	0.4	4.0	0.5	12.1	2.9	—	2.0
10. Industrial Finance Corp. of Thailand	0.04	—	4.4	—	2.0	1.1	—	0.7
11. Government Housing Bank	0.04	—	0.7	—	0.1	0.05	—	0.1
12. Small Industries Finance Office	0.04	—	—	—	—	(0.1)	—	—
Total	100	100	100	100	100	100	100	100

%

Thailand's financial institutions

TABLE IV
Household Savings at Financial Institutions: Outstanding Amounts^{1/}

(Millions of Baht)

Institution	Definition of savings	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1. Commercial banks	Deposits	6,081.1	7,305.4	8,464.2	11,249.2	13,331.4	15,880.3	18,810.6	21,957.7	26,644.4	34,557.8	42,237.3
2. Finance companies	Promissory notes, etc.	—	—	—	—	—	—	(113.8)	(264.7)	(679.4)	(1,658.9)	(3,177.0)
3. Life insurance companies	Life insurance reserves	(370.4)	(355.4)	(428.6)	(485.4)	(585.0)	(507.4)	734.0	875.7	991.2	1,119.7	(1,363.6)
4. Agricultural cooperatives	Deposits & capital funds	(160.3)	(175.8)	(192.9)	(211.6)	(232.1)	254.6	293.9	320.2	387.9	(469.7)	(568.8)
5. Savings cooperatives	Deposits & capital funds	(165.7)	(198.4)	(237.5)	(284.3)	340.3	410.4	489.5	581.4	686.4	(808.6)	(952.5)
6. Pawnshops	—	—	—	—	—	—	—	—	—	—	—	—
7. Credit foncier companies	—	—	—	—	—	—	—	—	—	—	—	—
8. Government Savings Banks	Deposits, savings certificates, etc.	1,650.1	2,398.8	2,891.5	3,571.4	4,250.6	4,802.1	5,280.2	5,656.8	6,181.2	7,507.0	9,472.2
9. BAAC	Deposits	8.8	7.7	8.7	8.6	18.8	38.9	73.3	104.9	143.6	196.6	274.8
10. Industrial Finance Corp. of Thailand	—	—	—	—	—	—	—	—	—	—	—	—
11. Government Housing Bank ^{2/}	Deposits	—	—	—	—	—	—	—	—	—	—	—
12. Small Industries Finance Office ^{2/}	—	—	—	—	—	—	—	—	—	—	—	—
Total		8,436.4	10,441.5	12,223.4	15,810.5	18,758.2	21,893.7	25,795.3	29,761.4	35,714.1	46,318.3	58,046.2

Pabon Wattanasiritham

^{1/} See text and footnotes under Table 2 also.

^{2/} As at the end of September 1973.

TABLE V.
Household Savings at Financial Institutions: Percentage of Total

Institution	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1. Commercial banks	72.1	69.9	69.2	71.1	71.1	72.5	72.9	73.8	74.6	74.6	72.8
2. Finance companies	—	—	—	—	—	—	(0.5)	(0.9)	(1.9)	(3.6)	(5.5)
3. Life insurance companies	(4.4)	(3.4)	(3.5)	(3.1)	(3.1)	(2.3)	2.8	2.9	2.8	2.4	(2.3)
4. Agricultural cooperatives	(1.9)	(1.7)	(1.6)	(1.3)	(1.2)	1.2	1.1	1.1	1.1	(1.0)	(1.0)
5. Savings cooperatives	(2.0)	(1.9)	(1.9)	(1.8)	1.8	1.9	1.9	2.0	1.9	1.8	(1.6)
6. Pawnshops	—	—	—	—	—	—	—	—	—	—	—
7. Credit foncier companies	—	—	—	—	—	—	—	—	—	—	—
8. Government Savings Bank	19.5	23.0	23.7	22.6	22.7	21.9	20.5	19.0	17.3	16.2	16.3
9. BAAC	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.5
10. Industrial Finance Corp. of Thailand	—	—	—	—	—	—	—	—	—	—	—
11. Small Industries Finance Office	—	—	—	—	—	—	—	—	—	—	—
Total	100	100	100	100	100	100	100	100	100	100	100

%

Thailand's financial institutions

TABLE VI
Household Savings at Financial Institutions : Annual Increases

(Millions of Baht)

Institution	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1. Commercial banks	1,224.3	1,158.8	2,785.0	2,082.2	2,548.9	2,930.3	3,147.1	4,686.7	7,913.4	7,679.5
2. Finance companies							(150.9)	(414.7)	(979.5)	(1,518.1)
3. Life insurance companies	(− 15.0)	(73.2)	(56.8)	(99.6)	(− 77.6)	226.6	141.7	115.5	128.5	(243.9)
4. Agricultural cooperatives	(15.5)	(17.1)	(18.7)	(20.5)	22.5	39.3	26.3	67.7	(81.8)	(99.1)
5. Savings cooperatives	(32.7)	(39.1)	(46.8)	56.0	70.1	79.1	91.9	105.0	122.2	(143.9)
6. Pawnshops	−	−	−	−	−	−	−	−	−	−
7. Credit foncier companies	−	−	−	−	−	−	−	−	−	−
8. Government Savings Bank	748.7	492.7	679.9	679.2	551.5	478.1	376.6	524.4	1,325.8	1,965.2
9. BAAC	− 1.1	1.0	− 0.1	10.2	20.1	34.4	31.6	38.7	53.0	78.2
10. Industrial Finance Corp. of Thailand	−	−	−	−	−	−	−	−	−	−
11. Government Housing Bank	−	−	−	−	−	−	−	−	−	−
12. Small Industries Finance Office	−	−	−	−	−	−	−	−	−	−
Total	2,005.1	1,781.9	4,977.4	2,947.7	3,135.5	3,787.8	3,966.1	5,952.7	10,604.2	11,727.9

TABLE VII

Household Savings at Financial Institutions: Annual Percentage Change

%

Institution	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1. Commercial banks	+ 20.1	+ 15.9	+ 32.9	+ 18.5	+ 19.1	+ 18.5	+ 16.7	21.3	+ 29.7	+ 22.2
2. Finance companies	-	-	-	-	-	-	(+ 132.6)	(+ 156.7)	(+ 144.2)	(+ 91.5)
3. Life insurance companies	(- 4.0)	(+ 20.6)	(+ 13.3)	(+ 20.5)	(- 13.3)	+ 44.7	+ 19.3	+ 13.2	+ 29.6	+ 21.8
4. Agricultural cooperatives	(+ 9.7)	(+ 9.7)	(+ 9.7)	(+ 9.7)	+ 9.7	+ 15.4	+ 8.9	+ 21.1	(+ 21.1)	(+ 21.1)
5. Savings cooperatives	(+ 19.7)	(+ 19.7)	(+ 19.7)	+ 19.7	+ 20.6	+ 19.3	+ 18.7	+ 18.1	+ 17.8	(17.8)
6. Pawnshops	-	-	-	-	-	-	-	-	-	-
7. Credit foncier companies	-	-	-	-	-	-	-	-	-	-
8. Government Savings Bank	+ 45.4	+ 20.5	+ 23.5	+ 19.0	+ 13.0	+ 10.0	+ 7.1	+ 9.3	+ 21.5	+ 26.2
9. BAAC	+ 12.5	+ 13.0	- 1.2	+ 118.6	+ 106.9	+ 88.4	+ 43.1	+ 36.9	+ 36.9	+ 39.8
10. Industrial Finance Corp. of Thailand	-	-	-	-	-	-	-	-	-	-
11. Government Housing Bank	-	-	-	-	-	-	-	-	-	-
12. Small Industries Finance Office	-	-	-	-	-	-	-	-	-	-
Total	+ 23.8	+ 17.1	+ 29.3	+ 18.6	+ 16.7	+ 17.8	+ 15.4	+ 20.0	+ 29.7	+ 25.3

Thailand's financial institutions

TABLE VIII

Household Savings at Major Financial Institutions: Annual Increases as Percentage of Total Saving of Households

%

Institution	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1. Commercial banks	18.4	12.1	17.7	18.9	24.5	20.9	22.7	25.4	38.5	31.1
2. Finance companies	—	—	—	—	—	—	(1.1)	(2.3)	(4.8)	(6.1)
3. Life insurance companies	(- 0.2)	(0.8)	(0.4)	(0.9)	(- 0.8)	1.6	1.0	0.6	0.6	(1.0)
4. Agricultural cooperatives	(0.2)	(0.2)	(0.1)	(0.2)	0.2	0.3	0.2	0.4	(0.4)	(0.4)
5. Savings cooperatives	(0.5)	(0.4)	(0.3)	0.5	0.7	0.6	0.7	0.6	0.6	(0.6)
6. Pawnshops	—	—	—	—	—	—	—	—	—	—
7. Credit foncier companies	—	—	—	—	—	—	—	—	—	—
8. Government Savings Bank	11.3	5.1	4.3	6.2	5.3	3.4	2.7	2.8	6.5	8.0
9. BAAC	—	—	—	0.1	0.2	0.3	0.2	0.2	0.3	0.3
10. Industrial Finance Corp. of Thailand	—	—	—	—	—	—	—	—	—	—
11. Government Housing Bank	—	—	—	—	—	—	—	—	—	—
12. Small Industries Finance Office	—	—	—	—	—	—	—	—	—	—
Total	30.1	18.6	31.6	26.8	30.1	27.1	28.6	32.3	51.7	47.5

TABLE IX

Credit Extended by Financial Institutions: Outstanding Amounts^{1/}

(Millions of Baht)

Institution	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1. Commercial banks	8,786.5	10,596.0	12,779.4	15,072.9	17,258.0	20,093.3	23,347.2	28,193.7	31,564.2	35,652.6	51,184.2
2. Finance companies	—	—	—	—	—	—	527.8	(842.5)	(2,162.4)	(5,280.0)	(9,933.2)
3. Life insurance companies	n.a.	n.a.	n.a.	n.a.	248.6	262.5	348.1	459.1	513.6	575.9	(645.6)
4. Agricultural cooperatives	n.a.	n.a.	n.a.	n.a.	418.2	481.7	542.3	653.3	812.2	(1,009.6)	(1,254.9)
5. Savings cooperatives	n.a.	n.a.	n.a.	n.a.	269.6	343.1	443.3	532.5	625.1	735.0	(864.4)
6. Pawnshops	n.a.	n.a.	n.a.	n.a.	n.a.	461.8	532.5	568.7	583.1	608.9	(635.7)
7. Credit foncier companies	—	—	—	—	—	—	n.a.	n.a.	n.a.	n.a.	(228.8)
8. Government Savings Bank	768.1	688.6	578.7	374.9	289.5	307.4	326.8	419.3	400.8	373.4	323.5
9. BAAC	224.1	210.9	223.3	217.3	381.0	688.4	993.4	1,208.9	1,439.5	1,736.8	1,952.4
10. Industrial Finance Corp. of Thailand	69.1	73.6	109.0	137.4	211.1	306.9	381.7	413.3	553.2	659.9	719.6
11. Government Housing Bank ^{2/}	106.4	101.4	122.8	102.7	112.0	146.5	173.6	168.0	149.4	124.9	32.6
12. Small Industries Finance Office ^{2/}	—	1.3	10.5	19.4	33.4	51.9	67.0	72.6	75.3	75.5	(75.7)
Total							27,683.7	33,531.9	38,878.8	46,832.5	67,850.6

Thailand's financial institutions

^{1/} See text and footnote ^{1/} under Table 2 also.^{2/} At the end of September 1973.

TABLE X
Credit Extended by Financial Institutions : Percentage of Total

%

Institution	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1. Commercial banks	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	84.3	84.1	81.2	76.1	75.4
2. Finance companies	—	—	—	—	—	—	1.9	(2.5)	(5.6)	(11.3)	(14.6)
3. Life insurance companies	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.3	1.4	1.3	1.2	(1.0)
4. Agricultural cooperatives	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.0	2.0	2.1	(2.2)	(1.9)
5. Savings cooperatives	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.6	1.6	1.6	1.6	(1.3)
6. Pawnshops	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.9	1.7	1.5	1.3	(1.0)
7. Credit foncier companies	—	—	—	—	—	—	n.a.	n.a.	n.a.	n.a.	(0.3)
8. Government Savings Bank	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.2	1.2	1.0	0.8	0.5
9. BAAC	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3.6	3.6	3.7	3.7	2.9
10. Industrial Finance Corp. of Thailand	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.4	1.2	1.4	1.4	1.0
11. Government Housing Bank	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.6	0.5	0.4	0.3	0.04
12. Small Industries Finance Office	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.2	0.2	0.2	0.1	(0.1)
Total							100.0	100.0	100.0	100.0	100.0

TABLE XI
Credit Extended by Financial Institutions: Annual Increases

(Millions of Baht)

Institution	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1. Commercial banks	1,809.5	2,183.4	2,293.5	2,185.1	2,835.3	3,253.9	4,846.5	3,370.5	4,088.4	15,531.6
2. Finance companies	—	—	—	—	—	—	(314.7)	(1,319.9)	(3,117.6)	(4,653.2)
3. Life insurance companies	n.a.	n.a.	n.a.	n.a.	13.9	85.6	111.0	54.5	62.3	(69.7)
4. Agricultural cooperative	n.a.	n.a.	n.a.	n.a.	63.5	60.6	111.0	158.9	(197.4)	(245.3)
5. Savings cooperatives	n.a.	n.a.	n.a.	n.a.	73.5	100.2	89.2	92.6	109.9	(129.4)
6. Pawnshops	n.a.	n.a.	n.a.	n.a.	n.a.	70.7	36.2	14.4	25.8	(26.8)
7. Credit foncier companies	—	—	—	—	—	—	n.a.	n.a.	n.a.	(228.8)
8. Government Savings Bank	— 79.5	— 109.9	— 203.8	— 85.4	17.9	19.4	92.5	— 18.5	— 27.4	— 49.9
9. BAAC	— 13.2	12.4	— 6.0	163.7	307.4	305.0	215.5	230.6	297.3	215.6
10. Industrial Finance Corp. of Thailand	4.5	35.4	28.4	73.7	95.8	74.8	31.6	139.9	106.7	59.7
11. Government Housing Bank	— 5.0	21.4	— 20.1	9.3	34.5	27.1	— 5.6	— 18.6	— 24.5	— 92.3
12. Small Industries Finance Office	—	9.2	8.9	14	18.5	15.1	5.6	2.7	0.2	(0.2)
Total							5,848.2	5,346.9	7,953.7	21,018.1

Thailand's financial institutions

TABLE XII
Credit Extended by Financial Institutions: Annual Percentage Change

Institution	%									
	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1. Commercial banks	+ 20.6	+ 20.6	+ 17.9	+ 14.5	+ 16.4	+ 15.0	+ 20.8	+ 12.0	+ 13.0	+ 43.6
2. Finance companies	—	—	—	—	—	—	(+ 59.6)	(+ 156.7)	(+ 144.2)	(+ 88.1)
3. Life insurance companies	n.a.	n.a.	n.a.	n.a.	+ 5.6	+ 32.6	+ 31.9	+ 11.9	+ 12.1	(+ 12.1)
4. Agricultural cooperatives	n.a.	n.a.	n.a.	n.a.	+ 15.2	+ 12.6	+ 20.5	+ 24.3	(+ 24.3)	(+ 24.3)
5. Savings cooperatives	n.a.	n.a.	n.a.	n.a.	+ 27.3	+ 29.2	+ 20.1	+ 17.4	+ 17.6	(+ 17.6)
6. Pawnshops	n.a.	n.a.	n.a.	n.a.	n.a.	+ 15.3	+ 6.8	+ 2.5	+ 4.4	(+ 4.4)
7. Credit foncier companies	—	—	—	—	—	—	n.a.	n.a.	n.a.	n.a.
8. Government Savings Bank	— 10.4	— 16.0	— 35.2	— 22.8	+ 6.2	+ 6.3	+ 28.3	— 4.4	— 6.8	— 13.4
9. BAAC	— 5.9	+ 5.9	— 2.7	+ 75.3	+ 80.7	+ 44.3	+ 21.7	+ 19.1	+ 20.7	+ 12.4
10. Industrial Finance Corp. of Thailand	+ 6.5	+ 48.1	+ 26.1	+ 53.6	+ 45.4	+ 24.4	+ 8.3	+ 33.9	+ 19.3	+ 9.0
11. Government Housing Bank	— 4.7	+ 21.1	— 16.4	+ 9.1	+ 30.8	+ 18.5	— 3.2	— 11.1	— 16.4	— 73.9
12. Small Industries Finance Office	—	+ 707.7	+ 84.8	+ 72.2	+ 55.4	+ 29.1	+ 8.4	+ 3.7	+ 0.3	(+ 0.3)
Total							+ 21.1	+ 15.9	+ 20.5	+ 44.9

TABLE XIII

Credit Extended by Financial Institutions: Annual Increases as Percentage of Gross Private Investment

%

Institution	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1. Commercial banks	17.4	18.9	13.4	12.5	13.9	13.6	20.8	13.5	16.6	51.4
2. Finance companies	—	—	—	—	—	—	(1.4)	(5.3)	(12.6)	(15.4)
3. Life insurance companies	n.a.	n.a.	n.a.	n.a.	0.1	0.4	0.5	0.2	0.3	(0.2)
4. Agricultural cooperatives	n.a.	n.a.	n.a.	n.a.	0.3	0.3	0.5	0.6	(0.8)	(0.8)
5. Saving cooperatives	n.a.	n.a.	n.a.	n.a.	0.4	0.4	0.4	0.4	0.4	(0.4)
6. Pawnshops	n.a.	n.a.	n.a.	n.a.	n.a.	0.3	0.2	0.06	0.1	(0.1)
7. Credit foncier companies	—	—	—	—	—	—	n.a.	n.a.	n.a.	n.a.
8. Government Savings Bank	— 0.8	— 1.0	— 1.2	— 0.5	0.1	0.1	0.4	— 0.07	— 0.1	— 0.2
9. BAAC	— 0.1	0.1	— 0.04	0.9	1.5	1.3	0.9	0.9	1.2	0.7
10. Industrial Finance Corp. of Thailand	0.043	0.3	0.2	0.4	0.5	0.3	0.1	0.6	0.4	0.2
11. Government Housing Bank	— 0.048	0.2	— 0.1	0.1	0.2	0.1	— 0.02	— 0.07	— 0.1	— 0.3
12. Small Industries Finance Office	—	0.1	0.05	0.1	0.1	0.1	0.02	0.01	0.001	(0.001)
Total							25.2	21.4	32.3	68.8

Thailand's financial institutions

TABLE XIV
Comparative Rankings of Financial Institutions in Thailand
 (Actual percentages appear in brackets)

Institution	On basis of household savings mobilized						On basis of credit provided					
	Percentage of total (average 1963-73)	Percentage of total (end of 1973)	Growth rate (average 1964-73)	Growth rate (1973)	Increase as % of real saving (average 1964-73)	Increase as % of real saving (1973)	Percentage of total (average 1969-73)	Percentage of total (end of 1973)	Growth rate (average 1964-73)	Growth rate (1973)	Increase as % of investment (average 1964-73)	Increase as % of investment (1973)
1. Com. banks	1 (72.2)	1 (72.8)	3 (21.5)	4 (22.2)	1 (23.0)	1 (31.1)	1 (80.2)	1 (75.4)	7 (19.4)	2 (43.6)	1 (19.2)	1 (51.4)
2. Finance cos.	4 (2.5)	3 (5.5)	1 (131.3)	1 (91.5)	3 (3.6)	3 (6.1)	2 (7.0)	2 (14.6)	1 (112.2)	1 (88.1)	2 (8.7)	2 (15.4)
3. Life insurance cos.	3 (3.0)	4 (2.3)	6 (16.6)	5 (21.8)	4 (0.6)	4 (1.0)	8 (1.2)	6 (1.0)	8 (17.7)	6 (12.1)	6 (0.3)	7 (0.2)
4. Agricultural coops.	6 (1.3)	6 (1.0)	7 (13.6)	6 (21.1)	6 (0.3)	6 (0.4)	4 (2.0)	4 (1.9)	6 (20.2)	3 (24.3)	4 (0.6)	3 (0.8)
5. Savings coops.	5 (1.9)	5 (1.6)	5 (19.1)	7 (17.8)	4 (0.6)	5 (0.6)	5 (1.5)	5 (1.3)	5 (21.5)	4 (17.6)	5 (0.4)	5 (0.4)
6. Pawnshops	—	—	—	—	—	—	5 (1.5)	7 (1.0)	9 (6.7)	8 (4.4)	8 (0.2)	8 (0.1)
7. Credit foncier cos.	—	—	—	—	—	—	11 (0.3)	10 (0.3)	—	—	—	—
8. Govt. Savings Bk.	2 (20.2)	2 (16.3)	4 (19.6)	3 (26.2)	2 (5.6)	2 (8.0)	9 (0.9)	9 (0.5)	11 (— 6.8)	10 (— 13.4)	11 (—0.3)	10 (—0.2)
9. BAAC	7 (0.2)	7 (0.5)	2 (49.5)	2 (39.8)	7 (0.2)	7 (0.3)	3 (3.5)	3 (2.9)	4 (27.2)	5 (12.4)	3 (0.7)	4 (0.7)
10. IFCT	—	—	—	—	—	—	7 (1.3)	7 (1.0)	3 (27.5)	7 (9.0)	6 (0.3)	6 (0.2)
11. Govt. Housing Bk.	—	—	—	—	—	—	10 (0.4)	12 (0.04)	10 (— 4.6)	11 (— 73.9)	10 (—0.004)	11 (—0.3)
12. SIFO	—	—	—	—	—	—	12 (0.2)	11 (0.1)	2 (106.9)	9 (0.3)	9 (0.05)	9 (0.001)
Total	100.0	100.0	21.4	25.3	32.4	47.5	100.0	100.0	25.6	44.9	36.9	68.8

PROFITABILITY OF COMMERCIAL BANKS IN THAILAND

Sa-Ngob Punnarugsa

I. INTRODUCTION

Earnings are the prime motive for entrepreneurs in order to help them put their money into business ventures. It is equally true for the banking business in that profit is the final test of their well-being and a comprehensive index of management's ability to accomplish their coordinative function of decision-making and planning. In summary, there are three reasons why business has to make profit. First of all, the stockholders should receive a satisfactory return compared with other alternative investments. Secondly, the growth of any business mostly depends on the operational results in the past years. Finally, some expenses of the business enterprise will naturally increase eventhough there is no expansion at all. Salary and wages are examples of expenses which increase year after year.

A. Objective of the Study

In Thailand, it is not a standard practice for any business to disclose operating result, profit and loss statement, to interested parties. The executives in any business are aware of the operating result of their enterprises but will hardly know about the performance of their industry as a whole. It is hoped that this study would accomplish the following purposes:—

1. Bank executives in Thailand will study the operating ratio of banking industry. However, the bank managers should be aware that this ratio of past performance cannot be used as the standard measurement of performance. But, by comparing those operating results of each individual bank with banking industry's average ratio, it should aid management in locating problem areas for further study and for planning and decision-making of the bank.

2. At the present time, only a few Thai banks receive financing facilities from banks and other financial institutions abroad. In order to help foreign lenders analyze and grant a credit line for any commercial bank in Thailand, information about the banking industry's performance should be a valuable one. With respect to this point, it will enable the foreign banks to increase credit line to Thai banks as a whole, either to new Thai banks which never received a credit line before, or to grant additional credit line to Thai banks which at present have already enjoyed the credit facilities from abroad.

3. There is an outcry from the public about bank profits since they feel that the banking industry is making too much profit. It is widely recognized that banking business involves social responsibility. This study should reveal some facts on the practice of banking in Thailand and promote mutual understanding and cooperation among monetary authorities, bankers and the public.

B. Scope and Method of Study

Most of the information presented in this paper has been obtained from unpublished information provided to the author. Statistical tables and ratio analysis here included are to be taken as derived from the information provided by the Bank of Thailand unless stated otherwise.

The statement of condition of the banking industry in this study is the summary of the report of condition, Form C.B. 3, of individual banks at the end of each year. The aggregated balance sheet of commercial banks is not a consolidated balance sheet in an accounting terminology because it fails to make adjustment and elimination about inter-bank account. It should be noted that as at the end of each year, December 31, the capital funds in the form of reserves appropriated from net profit are added up at the end of the first half year, June 30. The aggregated profit and loss account of banking industry is derived from the report of profit and loss, Form C.B. 5 of individual banks.

For analytical purposes, commercial banks in Thailand have been divided into two groups. The first group consists of 16 banks which are incorporated in Thailand. Another group comprises 13 foreign banks incorporated abroad.

II. PAST PERFORMANCE OF COMMERCIAL BANKS

A. Aggregated Balance Sheet

As mentioned before, the aggregated balance sheet is not a consolidated balance sheet. It should be noted that the capital fund for Thai banks consists of paid-up capital, statutory reserve, reserve appropriated from net profit, and undivided profit. For foreign banks, the capital fund includes funds allocated as capital by head office, reserved fund approved by head office and retained profit.

Table I indicates the composition of the various types of assets as a percentage of total assets, which indicates the uses of fund, and the composition of liabilities and net worth which shows the sources of fund. It can be seen that the percentage distribution of liabilities and net worth for the group of banks incorporated abroad is different from the group of banks incorporated in Thailand. The differences are in deposits and bank's overdrafts and other borrowings. For foreign banks, deposits accounted for 56.01 percent in 1970, 62.48 percent in 1971 and 60.68 percent in 1972 while Thai banks' deposits accounted for 79.79 percent in 1970, 79.63 percent in 1971, and 81.70 percent in 1972. This might be the result of government restriction in the opening of new branches for foreign banks while Thai banks may open new branches and obtain additional funds into the banking system from new areas. As for loans, overdrafts and other borrowings, the foreign banks had 24.90 percent in 1970, 18.50 percent in 1971, and 16.35 percent in 1972 but Thai banks had only 4.88 percent in 1970, 4.64 percent in 1971 and 3.14 percent in 1972. This phenomenon occurs because Thai banks can raise deposit easily but fail to lend efficiently. On the contrary, foreign banks may have more efficiency in credit management but can not raise sufficient funds from the public. The one solution which satisfies both foreign bankers and Thai bankers is that Thai banks lend the surplus loanable fund to foreign banks in the form of inter-bank call loan.

Regarding the assets, it seems to be that the management of assets by foreign banks is more productive than those of the Thai banks group. This can be confirmed by the low percentage of cash and balances with other banks and investment in total assets for the foreign banks group. The composition of assets in the form of advance: loan discount and overdraft, for foreign banks accounted for 77.22 percent in 1970, 75.41 percent in 1971 and 70.74 percent in 1972, while advance in total assets for the Thai banks group reached only 64.21 percent in 1970, 62.23 percent in 1971, and 58.59 percent in 1972.

Another explanation that can be generalized from these figures is that foreign banks can obtain a sizeable amount of credit either from their head offices or from

TABLE I
Comparative Percentage Distribution of Balance Sheet
As at December 31, 1970-1972

	All Banks			Thai Banks			Foreign Banks		
	1970	1971	1972	1970	1971	1972	1970	1971	1972
Liabilities & Net Worth									
Deposits	76.75	77.76	79.77	79.79	79.63	81.70	56.01	62.48	60.68
Other Demand Liabilities	0.91	0.90	1.21	0.84	0.85	1.16	1.42	1.28	1.57
Borrowing & Rediscounts	2.27	2.40	2.49	2.31	2.50	2.31	2.03	1.59	4.30
Loans, Overdraft and Other Borrowings	7.44	6.15	4.34	4.88	4.64	3.14	24.90	18.50	16.35
Other Liabilities	4.78	4.92	5.13	4.79	4.96	5.07	4.68	4.64	5.52
Capital Funds	6.63	6.62	5.98	6.15	6.14	5.52	9.84	10.49	10.71
Other Funds	1.22	1.25	1.08	1.24	1.28	1.10	1.11	1.02	0.87
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Assets									
Cash and Balances with Other Banks	13.63	13.55	13.20	14.20	13.91	13.33	9.72	10.61	11.38
Investments	14.34	16.53	21.26	14.84	17.13	21.92	10.86	11.63	14.56
Advances	65.87	63.67	59.68	64.21	62.23	58.59	77.22	75.41	70.74
Premises, Furniture and Equipment	2.94	2.86	2.64	3.20	3.06	2.78	1.14	1.22	1.15
Other Immovable Properties	1.23	1.24	1.13	1.41	1.39	1.24	0.13	0.02	0.05
Other Assets	1.99	2.15	2.09	2.14	2.28	2.14	1.03	1.11	1.62
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Total Assets (Millions of Baht)									
Liabilities + Net Worth = Total	46,651	54,899	68,823	40,682	48,901	62,662	5,969	5,998	6,161

Source: Bank of Thailand

other financial institutions abroad at lower interest rates than market lending rates in Thailand. Eventhough some Thai banks know about this fact and are confident of improving profitability by credit expansion, many of them are unable to obtain sufficient credit from banks and financial institutions abroad.

B. Aggregated Profit and Loss Statement

Table II presents incomes and expenses as percentages of total current operating incomes. It is not surprising that interests and discount on advances contribute the major part of total current operating incomes. Both Thai and foreign banks earn incomes in the same pattern except for two types of incomes. One of these items is the interest on government securities which is the second of the largest items of incomes for Thai banks. The fact that Thai banks invest heavily in government securities implies that Thai bankers do not know how to invest funds effectively in the form of risk assets. Another interpretation is that Thai bankers want to cooperate with the government.

Another interesting item is the profit on exchange which ranks second to discount and interests received from advances for the foreign banks group. This might be concluded that foreign banks have better access to current information and have better foreign exchange management. Otherwise, it could be that foreign companies which set up a subsidiary or branch in Thailand prefer to assign a large portion of their foreign business to foreign banks.

C. Return on Total Assets and Net Worth

By using total assets as base for measurement of profitability as indicated in Table III, it can be generally said that return on total assets for foreign banks is higher than the return for Thai banks.

Table IV presents another profitability index, return on capital funds. Surprisingly, the gross return, dividing total current operating incomes by total capital funds, for Thai banks, was above the gross return by foreign banks. When it comes to net profit after income tax, return on total capital funds for foreign banks was higher than Thai banks. Total current operating incomes as a percentage of total capital funds for Thai banks was 145.10 percent in 1970, 147.26 percent in 1971 and 147.64 percent in 1972, whereas for foreign banks it was only 109.16, percent in 1970, 108.76 percent in 1971 and 96.17 percent in 1972. Net profit after tax as a percentage of capital funds for Thai banks was 16.07 percent in 1970, 16.27 percent in 1971 and 16.16 percent in 1972, while for foreign banks it was 20.87 percent in 1970, 18.00 percent in 1971 and 11.77 percent in 1972.

III. DO COMMERCIAL BANKS MAKE EXCESSIVE PROFITS?

A. Yardstick for Measurement

From analysis in the preceding part, it is very difficult to conclude that commercial banks make excessive profits. No one can tell what the normal profit should be in any industry in Thailand. The lack of this information is not only in the banking industry but also appears in other industries. If we do not know what the average profitability of other industries is, how can we determine whether the banking industry makes an excess profit or not? Net profit after tax as a return on net worth for the banking industry was above 15.0% during the past three years. In other industries, the rate of return may be double or triple the rate of return in the banking industry but the other industries did not disclose information. From this point of view, it is not fair to complain that banks make an excess profit.

TABLE II
 Comparative Aggregates of Profit and Loss Statements
 For the year ended December 31, 1970-1972
 (Per cent of current operating incomes)

	All Banks			Thai Banks			Foreign Banks		
	1970	1971	1972	1970	1971	1972	1970	1971	1972
Total Current Operating Incomes	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Interest on government securities	9.45	10.51	16.10	9.84	11.21	16.95	7.07	7.48	9.35
Income from other securities	0.69	0.86	0.85	0.74	0.99	0.91	0.51	0.22	0.37
Interest and discount on advances	75.11	73.22	69.20	75.61	74.99	69.44	72.29	71.95	67.22
Fees and other charges	6.29	5.56	6.46	5.92	5.28	6.06	8.46	7.99	9.66
Profit on exchange	5.21	5.76	5.52	4.28	5.17	4.61	10.46	10.27	12.82
Other incomes	3.25	4.09	1.87	3.61	2.36	2.03	1.21	2.09	0.58
Total Interests and Discount	47.93	49.17	52.23	48.70	49.71	53.47	43.58	46.63	42.23
On deposits	38.73	41.30	45.70	40.35	42.83	47.86	29.60	31.42	28.32
On borrowed money	9.20	7.87	6.53	8.35	6.88	5.61	13.98	15.21	13.91
Gross Operating Income	52.07	50.83	47.77	51.30	50.29	46.53	56.42	53.37	57.77
General and Administrative Expenses	30.69	31.09	30.71	31.01	29.99	30.34	30.57	28.70	33.77
Salaries, wages and allowance	14.92	14.59	15.61	15.41	15.29	15.66	13.73	13.19	15.25
Expenses on bank premises	4.49	4.81	5.06	4.74	5.20	5.26	3.11	2.99	3.49
Other expenses	11.28	11.69	10.04	10.86	9.50	9.42	13.73	12.52	15.03
Net Operating Incomes	21.38	19.74	17.06	20.29	20.30	16.19	25.85	24.67	24.00
Losses and Recoveries Item	6.35	5.20	2.72	7.23	5.79	2.49	1.38	2.88	4.58
Profit before Income Taxes	15.03	14.54	14.34	13.06	14.51	13.70	24.47	21.79	19.42
Taxes on Net Profit	2.74	2.75	3.24	1.98	3.46	2.74	5.35	5.23	7.17
Net Profit	12.29	11.79	11.10	11.08	11.05	10.96	19.12	16.56	12.25
Amount in Millions of Baht									
Total Current Operating Incomes	4,274	5,107	5,741	3,633	4,422	5,106	641	684	634

Source: Bank of Thailand

TABLE III

Comparative Aggregates of Profit and Loss statement
 For the period year ended December 31, 1970-1972
 (Per cent of total assets)

	All Banks			Thai Banks			Foreign Banks		
	1970	1971	1972	1970	1971	1972	1970	1971	1972
Total Current Operating Incomes	9.16	9.30	8.34	8.93	9.04	8.14	10.74	11.40	10.29
Interest on government securities	0.86	0.97	1.35	0.87	0.99	1.38	0.76	0.85	0.96
Income from other securities	0.07	0.08	0.07	0.06	0.09	0.07	0.05	0.02	0.03
Interest and discount on advances	6.89	6.82	5.77	6.75	6.64	5.65	7.76	8.20	6.92
Fees and other charges	0.58	0.52	0.54	0.52	0.47	0.49	0.91	0.91	0.99
Profit on exchange	0.47	0.53	0.46	0.39	0.46	0.38	1.13	1.18	1.32
Other incomes	0.29	0.38	0.15	0.34	0.39	0.17	0.13	0.24	0.07
Total Interests and Discount	4.38	4.58	4.35	4.35	4.47	4.35	4.67	5.31	4.34
On deposits	3.54	3.84	3.81	3.60	3.87	3.90	3.17	3.58	2.91
On borrowed money	0.84	0.74	0.54	0.75	0.60	0.45	1.50	1.73	1.43
Gross Operating Income	4.78	4.72	3.99	4.58	4.57	3.79	6.07	6.09	5.95
General and Administrative Expenses	2.82	2.88	2.54	2.76	2.84	2.45	3.11	3.26	3.47
Salaries, wages and allowance	1.36	1.35	1.30	1.37	1.34	1.27	1.31	1.50	1.57
Expenses on bank premises	0.42	0.45	0.42	0.42	0.46	0.42	0.33	0.34	0.36
Other expenses	1.04	1.08	0.82	0.97	1.04	0.76	1.47	1.42	1.54
Net Operating Income	1.96	1.84	1.45	1.82	1.73	1.34	2.96	2.83	2.48
Losses and Recoveries Item	0.58	0.48	0.25	0.67	0.51	0.20	0.15	0.24	0.48
Profit before Income Taxes	1.38	1.36	1.20	1.15	1.22	1.14	2.81	2.59	2.00
Taxes on Net Profit	0.25	0.27	0.27	0.17	0.20	0.22	0.73	0.67	0.73
Net Profit	1.13	1.09	0.93	0.98	1.02	0.92	2.08	1.92	1.27
Amount in Millions of Baht									
Total Assets	46,651	54,899	68,823	40,682	48,901	62,662	5,969	5,998	6,161

Source: Bank of Thailand

TABLE IV
Comparative Aggregates of Profit and Loss Statements
For the year ended December 31, 1970-1972
(Per cent of capital funds)

	All Banks			Thai Banks			Foreign Banks		
	1970	1971	1972	1970	1971	1972	1970	1971	1972
Total Current Operating Incomes	138.28	140.59	139.40	145.10	147.26	147.64	109.16	108.76	96.17
Interest on government securities	13.04	14.77	22.45	14.29	16.16	25.02	7.73	8.14	8.99
Income from other securities	0.97	1.22	1.19	1.07	1.43	1.34	0.54	0.24	0.36
Interest and discount on advances	103.86	102.93	96.46	109.71	108.10	102.53	78.91	78.24	64.64
Fees and other charges	8.71	7.80	9.00	8.58	7.62	8.95	9.24	8.69	9.29
Profit on exchange	7.20	8.11	7.69	6.21	7.46	6.80	11.42	11.17	12.32
Other incomes	4.50	5.76	2.61	5.24	6.49	3.00	1.32	2.28	0.57
Total Interests and Discount	66.29	69.14	72.81	70.72	73.00	78.95	47.58	50.72	40.62
On deposits	53.56	58.05	63.71	58.59	63.07	70.67	32.31	34.18	27.24
On borrowed money	12.73	11.09	9.10	12.13	9.93	8.28	15.27	16.54	13.38
Gross Operating Income	71.99	71.45	66.59	74.38	74.26	68.69	61.58	58.04	55.55
General and Administrative Expenses	42.47	43.74	42.85	44.94	46.36	44.83	31.71	31.24	32.50
Salaries, wages and allowance	20.64	20.53	22.77	22.34	21.82	23.14	13.31	14.35	14.67
Expenses on bank premises	6.22	6.77	7.06	6.86	7.51	7.77	3.40	3.27	3.36
Other expenses	15.61	16.44	14.02	15.74	17.03	13.92	15.00	13.62	14.47
Net Operating Income	29.52	27.71	23.74	29.44	27.90	23.86	29.87	26.80	23.05
Losses and Recoveries Item	8.80	7.31	3.80	10.51	8.36	3.68	1.51	2.36	4.41
Profit before Income Taxes	20.72	20.40	19.94	18.93	19.54	20.18	28.36	24.44	18.64
Taxes on Net Profit	3.74	3.82	4.47	2.86	3.27	4.02	7.49	6.44	6.87
Net Profit	16.98	16.58	15.47	16.07	16.27	16.16	20.87	18.00	11.77
Amount in Millions of Baht									
Total Capital Funds	3,091	3,663	4,119	2,504	3,003	3,459	588	629	660

Source: Bank of Thailand

One may argue that banking is a kind of business which has stability in earning and the rate of return will be less than the average rate of return in other industries which have a great deal more fluctuations in earning results. If we apply the opportunity cost approach, the rate of return for stockholders should not be less than the interest rate on government bonds which yield a return between 8.0% to 9.5%. With respect to this concept, it can be concluded that the average rate of return for the banking industry in Thailand, even though it did not produce an excess profit, should meet the minimum satisfaction of the stockholders of banking industry.

B. The Emergence of Finance Companies

In spite of the lack in concrete evidence about an excessive profit in banking business, the emergence of finance companies should be supportive evidence that there is a gap in banking service operation that can be filled by another type of financial institution. Sources of funds for finance companies are composed of funds invested by shareholders and funds accumulated by borrowing from the public, commercial banks and other financial institutions. Compared with sources of funds for commercial banks which receive deposits from the public and borrow from other financial institutions, it obviously can be seen that finance companies and commercial banks compete with each other for fund accumulation. On the other hand, the major use of funds for commercial banks and finance companies is to lend to meet the demand of individuals, business enterprises and government.

As a matter of fact, the interest cost of fund for finance companies is much higher than the interest cost of fund for commercial banks. Furthermore, the gross earning of finance company in many cases is less than the gross earning of commercial banks. On the other hand commercial banks can earn in some categories of incomes; such as profit from exchange, transfer money fee and others, while finance companies can earn only from lending.

Table V presents an unofficial estimate of total liabilities of finance companies. These figures may not include all the finance companies in Thailand. Formerly there was no formal requirement to report to the public or to the monetary authorities.

TABLE V
Total Liabilities of Finance Companies
(Preliminary Estimates)

(Millions of Baht)

Number of Company	Date	Year	Amount
34	December 31	1969	454.4
34	December 31	1970	1,094.3
34	December 31	1971	2,349.8
34	September 23	1972	3,302.2
103	September 23	1972	4,021.4
51	December 31	1972	5,351.2
54	December 31	1973	7,499.2
60	April 4	1974	9,459.4

Source: Unofficial estimates

From the growth in total liabilities of finance companies in Thailand it might be concluded that the banking business makes an excess profit, otherwise, it would be impossible for finance companies to have succeeded as a new financial service institution in Thailand.

C. The Role of Thai Bankers Association

In the past, Thai Bankers Association received much criticism from the public and academics concerning its setting-up of a minimum interest rate for lending which leads to monopoly in the banking industry. The prime rate is determined as a minimum lending rate to prime customers of the bank. Normally, when the banks are in a high liquidity position the prime rate was higher than the market lending rate. This is why the finance companies can emerge because of the inability of bank managers to lend to their customers at a realistic market rate. Frequently, the bankers may know that the present market rate is lower than the prime rate but they do not want to break a commitment with the association so they lend the surplus funds to finance companies.

In my opinion, the Bankers Association should not set up the minimum price of funds in the market. By fixing the price of lendable fund some banks may get an excess profit because some borrowers could not find an alternative source of borrowing. On the other hand, it might be concluded that there is inefficiency in bank management. As a matter of fact, any decision made by a banker will result in profit at a minimum satisfactory level; for some bankers who are aggressive will earn a return at the above average level. In some banks, the bank management may not think about economy of scale in operation because to operate at any size, they will make profit anyway.

D. Other Benefits for Bankers

It is a normal practice for some bankers in Thailand to invest in other business ventures, such as trading firms, manufacturing firms and others. The bankers' business firms may easily obtain credit facilities from their own bank whereas other business firms' application for credit may have to be scrutinized by a bank loan officer and a credit committee first. In some extreme cases, a bank may not grant credit facilities to those businesses which will directly compete with the banker business. The bankers, as investors in other business, obtain very high profits in their other industries. Moreover, the return from other business might account for the major part of income to the bank's owner.

Although, the law does not permit a bank director to be a debtor to his bank the law does not prohibit a bank director from one bank to be a borrower from another bank. The bankers who have other business beside banking may accommodate one another by granting credit facilities to the business which does not belong to their own banks.

IV. PROMOTION FOR MORE COMPETITION

A. Maximum Interest Rate for Deposit

In order to promote competition in the banking industry, some scholars believe that the regulation of maximum interest rate should be abolished and the price of money, interest rate, whether in the form of deposit or advance, will largely depend on demand and supply of money in the market. It seems that if we abolished the maximum interest rate limitation it would bring about almost perfect competition, leading to an improvement in management efficiency. But it may be argued that banks are a financial institution which the government uses for implementation of monetary policy, and therefore should have some guidelines about interest rate for management of the bank. By fixing the maximum interest rate for deposit, the Bank of Thailand may adjust the rate periodically according to the objective of the government which will produce economic stability and growth for the country.

B. Opening of New Branch

The area in which a bank may locate a branch should depend on the management decision from each bank. The Bank of Thailand should set up and announce a standard requirement for banks which want to open a new branch. If a bank can demonstrate that it can meet with the conditions for opening a new branch, the Bank of Thailand should have no objection and should not prevent the commercial bank from opening a new branch. The Bank of Thailand should not determine the number of bank branches in each area. For example, suppose, at the present time there are 14 bank branches in province A, and bank B which does not have a branch in province A wants to set up a branch in province A. The Bank B should inform Bank of Thailand and if bank B can demonstrate that it is possible to operate under the conditions which Bank of Thailand announced, the Bank of Thailand should automatically permit Bank B to open a new branch in province A to bank B. The fact that the Bank of Thailand exercises discretionary power in permitting a new branch to be set up makes it look as if the Bank of Thailand supports monopolistic competition in banking business.

Furthermore, the concept of mobile banking unit should be adopted here. In Thailand, there are many remote areas which may not be justified for a bank to set up a branch at the first time. The mobile banking unit will effectively serve the public need in that area and educate the public about banking business. The mobile banking office might raise questions about security but the bank management should plan and be responsible to the depositors themselves.

C. New Commercial Banks

The question regarding granting a license to a new commercial bank has been a political issue for a long time. In my personal opinion, granting a new commercial bank license is one of the best alternatives in order to achieve competition and better wealth distribution. The opening of a new bank should be an economic issue. In order to do this, the monetary authorities should set up and announce a standard requirement for application of opening a new bank. Anyone who can fulfill the condition which have been set by the monetary authorities should be granted a license. At the moment, it is widely believed that even a small bank has a significant amount of intangible value. If the government grants a license for a new commercial bank, the intangible value for present bank licenses will be eliminated or sharply reduced. The price of a bank's share in the market will depend on the performance of the bank management. If the government grants a new license to a group of entrepreneurs who want to do banking business, the question about how much profit a bank should make and whether there is excessive profit or not, will be simultaneously solved.

D. Innovations and New Services

The bankers and monetary authorities should regard banks as a financial service institution. Presently, it seems that banks are only considered as short-term deposit and lending institution. In order to promote competition and better wealth distribution among the public, the authorities should support innovations and new services in banking business. Banks as a financial service institution should provide many types of financial services. Of course, some of these services have not been offered by the banks before. In my view, there should be no harm if the banks want to initiate a new kind of financial service. Commercial banks in a modern society should not confine their functions to only traditional banking business as in the olden times.

The Bank of Thailand could play an important role to support some new services which could lead to a better wealth distribution among the public. For example, educational institution loans, housing loans, automobile financing, loans for personal education, should be promoted by the Bank of Thailand. Otherwise, the borrower for these services have to pay a high interest rate. There should not be much difficulty to promote banking institution to be a full financial service institution in Thailand. Most of the public recognize that commercial banks are still the strongest financial institution in Thailand and there are many opportunities to utilize this institution more effectively to benefit the country as a whole.

E. Banking Hours

There should be no restriction of banking hours. If the banker wants to open his office 7 days a week and 24 hours a day it is the bank's business to render the service to public. However, this must conform with the labour law. If the banking hours are longer than normal business working hours one can imagine that this could promote the opportunity to the public for using service from the bank. This might lead to a higher percentage composition of demand deposits held by the public in money supply.

TABLE VI
Composition of Money Supply
December 31, 1963-1973

(Millions of Baht)

	Currency	Demand Deposits	Money Supply	Currency as % of Money Supply	Demand Deposit as % of Money Supply
1963	6,660.3	3,541.2	10,201.5	65.29	34.71
1964	7,265.8	3,672.0	10,937.8	66.43	33.57
1965	8,124.5	4,792.3	12,916.8	62.90	37.10
1966	9,370.9	5,285.6	14,656.5	63.94	36.06
1967	9,823.9	5,882.4	15,706.3	62.55	37.45
1968	10,640.7	6,644.7	17,285.4	61.56	38.44
1969	10,949.7	7,039.1	17,988.8	60.87	39.13
1970	11,863.5	7,584.0	19,447.5	61.00	39.00
1971	13,053.0	8,392.7	21,445.7	60.87	39.13
1972	15,279.3	9,551.6	24,830.9	61.53	38.47
1973	18,645.4	11,291.1	29,936.5	62.28	37.72

Source: Bank of Thailand

From Table VI it can be seen that the composition of demand deposit in money supply was only 37.72 percent in 1973. At the present time, most of the demand deposit accounts are business enterprises' accounts and businessmen who have the opportunity to come to the banks during banking office hours. If the depositors can withdraw and deposit money after they finish their usual business during the day it could promote understanding among the public to use bank services. As a consequence the government might save a lot of expenses for printing bank notes in the future.

F. Protection for Depositors

From the preceding part, it could be implied that a freely competitive banking system should be promoted. At the present time, there is an unwritten understanding that the government cannot afford bankruptcy of commercial banks. This concept should

be abolished. It is true that the public panic in withdrawing deposits from banks could destroy the economy as a whole. But, if we want to see more competition in banking we must recognize that the bank that is inefficiently managed should go out and the depositors must be protected. In order to protect those depositors it seems a deposit insurance institution like Federal Deposit Insurance Corporation (FDIC) in the United States of America might be needed. A membership in this new insurance institution could be voluntary depending on the bank management. The bank which is a member must pay a premium to the institution. The maximum coverage amount to be insured should not be more than 100,000 baht per one depositor in one bank. Table VII indicates that most of the depositors have deposits under 100,000 Baht. When an insured bank fails to pay the withdrawal money to the depositor the latter can get the money back from the insurance institution.

TABLE VII

Size of Deposits
December 31, 1971

	Percentage of Total Number of Accounts		
	Demand Deposits	Saving Deposits	Time Deposits
Under 100,000 Baht	97.54	99.57	91.80
100,000-299,999 Baht	1.48	0.31	5.93
250,000-499,999 Baht	0.49	0.07	1.15
500,000-999,999 Baht	0.24	0.03	0.65
Over 1,000,000 Baht	0.25	0.02	0.47
Total	100.00	100.00	100.00

Source: Bank of Thailand

V. CONCLUSION

In spite of the lack of information regarding an average return on other industries, at least it could be concluded that the banking industry in Thailand makes a satisfactory rate of return to the shareholders. The emergence of finance company business is a supplementary evidence of the high profitability in banking business. In the future, the role of the Thai Bankers' Association might be changed and it could be concentrated in many activities which should be done in the form of technical cooperation among members. The Association must recognize that financial institutions in Thailand have changed tremendously from the past. Furthermore, the Association could play a role in public education about banking business.

In order to cope with the changing business environment and technology, the bankers have to develop their staff and improve methods and procedures for banking operations. The owners of the banks must admit that if they are not capable of managing their banks efficiently they should allow another professional management team to substitute them. Furthermore, some bankers should observe public responsibility more than in the past. The profit of the bank serves only just a few groups of shareholders. The bank should contribute some earnings to society and the public as a whole. A bank which is an absolutely public company should be promoted by the government.

The banking authorities especially the Bank of Thailand should play a significant role in order to support more competition among the banks. The number of staff of the Bank of Thailand should be sufficient to cope with the number of bank branches or a new bank that will be set up. Education about financial institutions to the public should be added as another function of the Bank of Thailand. Not only should the Bank provide information on economic research but it should also publish materials concerning general aspects of banking and distribute them to all levels of educational institutions in Thailand.

It is very much hoped that there is a real intention for mutual understanding and cooperation between the Bankers' Association, the bankers and the monetary authorities to promote competition which could lead to a better wealth distribution among the public. The country will thereby get the full advantage from banking business which should be regarded as a full financial service institution.

THAI COMMERCIAL BANKING OF THE 1980'S

*Thep Roongtanapirom**

Considering all types of financial institutions in Thailand, commercial banking system is the most important one. This is obvious from its statistics of growth. During the period of 1963 to 1973, the average annual increase in bank deposits was 19.38 percent, and 19.55 percent for loans and overdrafts. As of December 31, 1973, the banking system had total assets of 89.8 billion bahts, total deposits of 58.4 billion bahts and total loans and overdrafts of 51.2 billion bahts. The success of banking business in the past decade was resulted from the coincidental environments, both in economic and political aspects. However, since 1970, there has been some internal and external changes, affecting the business of commercial banks in particular. The sequence of events has happened rapidly. Moreover, various types of financial institutions have been mushrooming. Banks' top managements have to be alerted to the changing situation accordingly.

This paper intends to indicate in which directions Thai commercial banks seem to be in the 1980's especially in the following aspects:—

1. Credit policy
2. Sources of funds
3. Liquidity management
4. Capital increment
5. General management and control.

I. CREDIT POLICY

Basic functions of a commercial bank are attracting deposits and extending loans, making earnings from the difference between interest received and interest paid. Consequently, interest receipt is the most important source of income, which may be the only source to determine survival of some banks. If a bank can generate high volume of income from interest receipts, it can achieve a great deal of growth and expansion. Contrarily, if such source of income is not sufficient, the bank can become stagnant and devastating, which may easily lead to banking collapse. The discussion on the credit policy should be divided into three topics:—

- 1.1 Fully covered collateral loans
- 1.2 Term loans
- 1.3 Agricultural loans

Firstly, banks' concentration on granting credit based on the value of security is partly to protect themselves from credit risk. The security acquired from a borrower may be either in the form of land or building. This type of lending is known as "collateral loans", which leads to some criticism about a bank's function as being no other than a huge pawnshop. However, for those who are in the banking business, they realize that these collaterals are necessary, since most of the time they cannot obtain complete information about the borrowers. For instance, a banker may not know his borrowers well enough due to the borrowers' reluctance to disclose their real financial positions to the bank. As a result, bank credit officers do not possess the full view of

* in collaboration with Supatra Upatham, Chana Satasut and Buranee Korchitmet

the borrower's business and actual needs. Thus, collateral loans seem to be the only way out. Undoubtedly, some banks are considered conservative on this matter. However, this lending policy is gradually changing. Many banks have started to make loans basing primarily on the soundness of projects, and collateral comes second in its importance. It is believed that this will become a common banking practice in the next decade owing to the following reasons:

a) The volume of securities, especially amount of land is limited. Whenever a piece of land is hypothecated, it cannot easily be used to secure more loans.

b) Tough competition compels a borrower to study the viability of his plan before deciding to invest. He will have a well-managed and reliable financial statements to offer to a bank in order to obtain loans.

c) It is generally accepted that the purpose of loans is an important factor in extending credit. Hence, commercial banks should concentrate their lending on productive project loans instead of collateral loans.

Secondly, as aforementioned, banking business is accepting deposits and is obliged to honour any legitimate cash withdrawal. Although bank deposits currently are in three main categories of fixed, saving and demand deposits, cash withdrawal by depositors is honoured like money-at-call. This practice of deposits greatly affects banks' loan policies. The banks have to direct their resources more to short-term rather than medium or long-term loans. In addition, the basic production in Thailand is primary products. The need for long-term loans had not risen substantially until the country started her Economic and Social Development Plans. The shift of primary production to secondary and final products requires heavy investment in plant and machinery. Banks, therefore, have to increase their volume of longer-term loans which naturally will force them in turn to find more long-term fund apart from their conventional sources.

Thirdly, classifying by purposes of business, the loans made to the agricultural sector are of small percentages, in comparison to total loan portfolio, as can be seen in Table I.

TABLE I
Commercial Banks Loans and Advances Classified by Purposes as at Year's End

(Millions of Baht)

	1971	%	1972	%	1973	%
1. Agriculture	688.6	2.9	712.6	2.8	888.7	2.6
2. Mining	399.7	1.7	380.1	1.5	375.0	1.1
3. Manufacturing	4,313.7	18.2	4,245.1	16.5	6,335.5	18.4
4. Construction	1,657.7	7.0	1,949.3	7.6	2,322.1	6.7
5. Real Estate Business	1,612.6	6.8	1,841.1	7.1	2,385.6	6.9
6. Imports	3,361.9	14.2	2,821.8	10.9	3,045.9	8.8
7. Exports	1,639.1	6.9	1,610.5	6.2	2,442.9	7.1
8. Wholesale & Retail Trade	4,993.8	21.1	5,866.0	22.7	8,459.6	24.5
9. Public Utilities	455.9	1.9	375.0	1.5	585.8	1.7
10. Banking & Other Financial Business	487.6	2.1	1,124.1	4.4	1,261.2	3.7
11. Services	1,867.2	7.9	2,024.9	7.8	2,219.8	6.4
12. Personal Consumption	2,183.1	9.2	2,849.8	11.0	4,133.1	12.0
13. Others	22.8	0.1	10.1	—	31.3	0.1
Total	23,683.7	100%	25,810.3	100%	34,486.5	100%

Source: Bank of Thailand.

Commercial banks' lending to farmers does not increase as rapidly as should be, due to the following reasons:

- a) Banking experience in agricultural field is limited.
- b) Agricultural productions are subject to seasonal characteristics and several uncontrollable factors which heighten the credit risk.
- c) There have been other existing institutions set up to give assistance directly to farmers.

However, the volume of institutional finance to farmers does not meet their demand yet. It is time for commercial banks to step in. Agricultural credit can be extended directly to farmers through a bank's up-country branches. In addition, banks should also promote more agro-industries as marketing base for agricultural products. The agricultural credit could become more attractive if the government would set up a credit guarantee corporation undertaking to share parts of the possible loss, as already provided for by many countries.

II. BANKS' SOURCES OF FUNDS

The growth of a bank partly depends on its acquisition of funds. In general, bank funds may come from an internal source which includes registered capital, reserves and retained earnings; all integratedly called capital funds. The other is from an external source including deposits and borrowings.

This section of the paper will touch only on the deduction in the cost of deposits, mobilizing longer-term deposits, branch expansion and foreign borrowing.

2.1 An attempt to decrease cost of deposits and search for new sources of funds

The structure of banking deposits includes roughly 70% of fixed deposits, 9% of saving deposits and 21% of demand deposits. Banks, therefore, have to pay high cost of funds due to the high portion of fixed deposits acquired. To lower the cost is to reduce the weighted average cost of funds. In doing this, banks should find the way to pull in more checking and saving accounts. Innovation in this field is essential, provided proper cost/benefit plan has been studied.

As to the question of long-term fund requirement, banks must find some new methods to attract longer-term deposit such as the issuance of negotiable certificates of deposits with maturity over one year. However, the successful implementation must also come from the Government in developing the capital market as well as in adjusting the banking law. As it is, some commercial banks daringly allocate a part of their short-term fund to finance 5-7 year projects. They could have provided more term loans to the needed factories, if full support had been made by the authorities concerned, such as, the permission to issue long term CD or the rediscount of industrial term bills.

2.2 Branch expansion

Branches are analogously arms of a bank, opening an opportunity to develop business directly with people from all walks of life. Banks, therefore, are able to extend credit to local entrepreneurs, farmers and traders. Simultaneously, they provide safety for public savings, render efficient services in inter-provincial money transfer and bill collection. The importance of branch network can be seen from the increasing number of branches from 1953 to 1973 as follows:

ALL COMMERCIAL BANKS	1953	1967	1973
No. of branches	68	506	760

The necessity to expand branches, especially in up-country, is imminent, since it provides a bank with real strength to compete in banking business and also with non-bank finance companies. To enable the branches to work more effectively, the management must equip them with full banking services and sufficient delegation of authority.

2.3 *Foreign borrowing*

A wise banker should be able to pool funds from sources other than bank deposits in order to insure greater flexibility in fund management: especially when the capability to increase assets is greater than the ability to mobilize deposits. At times, a bank may borrow cheap overseas funds to replace expensive local funds. The bank that will be successful in this aspect must have competent international money men as well as maintaining strong relationship with its foreign correspondent banks.

III. LIQUIDITY MANAGEMENT

Liquidity may be defined as the bank's readiness to honour cash withdrawal upon demand. Banks may keep their liquidity partly in cash and partly in liquid assets which can be converted into cash conveniently and without loss. In addition to keeping a reasonable level of liquid assets, bank must be aware of the concept of liability liquidity by constantly looking for potential sources of additional credit lines.

In general, banks prefer to invest in government securities—both in treasury bills and government bonds. This is due to the lack of an organized capital market. The majority of companies in Thailand are virtually of small scales and privately owned. Accordingly, the trading of corporate shares is limited. In the absence of an active secondary market, a bank has no other choices but to invest its excess funds in government securities, since they are considered risk-free papers and can be pledged with the Bank of Thailand for cash. Moreover, they can be hold as a part of legal reserves. However, the government is in the process of pushing the idea of a capital market into reality. Therefore, in order to gain from the establishment of the capital market, banks must develop qualified money traders and security analysts.

IV. CAPITAL INCREMENT

Capital funds of a bank comprises of

- a) paid-up capital,
- b) statutory and other reserves, and
- c) retained earnings.

The importance of capital funds is such that

- a) it is a basic source of funds for the bank;
- b) it measures a bank's soundness;
- c) it is a base for credit expansion. The Bank of Thailand has laid down a rule that a bank can generate its risk assets at the maximum of 11.1 times of capital funds. In order to expand its business, a bank has to increase its capital funds.

In the past, banks increased their capital funds from operations in the form of retained earnings with only small portion of additional contributions from shareholders. However, the rapid increase in loan demand calls for larger capital investment which can not be provided by the retained earnings alone. Therefore, in the recent past, most banks increased their capital base by issuing new shares to the existing shareholders. This has become a burden to present shareholders to supply the additional funds. Thus it is time for the banks to sell a portion of shares to the public in order to retrieve the needed capital funds. Other than an advantage of increasing capital funds, it helps to improve the public image towards banking institution.

V. MANAGEMENT AND CONTROL

A bank that can survive in the rapidly changing scene must be adaptive and well-prepared. The top management will play a vital role in carrying out this task. They have to accumulate trained personnel for various responsibilities. To build a good team consumes a great deal of time and efforts. Therefore, lag period of around 5—6 years must be provided. Training and development of personnel does not only take times, but it also requires cost. Nonetheless, with proper utilization of knowledgeable employees, the bank as a whole will undoubtedly gain from such investment. To utilize human resources efficiently and effectively calls for management decisions regarding the release of control. Too close supervision and control by the central office will not quite benefit the organization. Modern management must realize that educated workers need reasonable degree of autonomy to perform good job. In addition, certain organizational structure must be changed in order to ensure effective communication. For example, regional head offices should be formed to attain fast services to local needs as well as to serve as branch control and guidance.

Conclusion

This paper has briefly shown some banking practices which will be probable in the decade of 1980's. Some bank managers are already conscious of the coming changes, while others are not. A bank's survival through competition needs far-sighted planning particularly in personnel training. When these changes are successfully met, ultimate benefits will reach the public in forms of better banking services to all.

AN EVALUATION OF THAILAND'S MONETARY POLICY IN THE 1960'S*

Warin Wonghanchao

In the following paper, the policy making process of the Bank of Thailand is analyzed by means of a theoretical model which was first developed by H. Theil.^{1/} An attempt is made in the paper to test the hypothesis that the policy maker at the Bank of Thailand, intentionally or unintentionally, has been carrying out a policy consistent with the maximization of a prescribed social welfare function aimed at achieving income growth, price stability, and the increase in the purchasing power for goods and services produced abroad. The theoretical base of the analysis is developed in the first part of the paper while the method of analysis, data and the verification of the hypothesis are presented in the last part of the paper.

I. A MODEL FOR DESCRIBING THE PROCESS OF THE MONETARY POLICY

Assume that the objective of a monetary policy is to maximize a social welfare function or a policy utility function, u , which encompasses a number of selected target variables such as income growth, price stability and the accumulation of foreign assets. Let this welfare function take a specific form as follows:

$$u = - \sum_{i=1}^m w_i (T_i - T_i^d)^2 + \sum_{j=m+1}^n w_j^h T_j^h \quad (1)$$

Where T_i is the i th target variable, e.g. price level, which a policy maker wishes to influence but does not control,

T_i^d is the most desirable value that may be attained by T_i ,

T_j^h is the j th target variable which has no upper bound to its desirable value, e.g. income,

w_j^h is the weight or the relative importance that a policy maker gives to T_j^h ,

w_i is the weight attached to T_i^d .

The welfare function (1) may be expanded and be written in matrix notation as follows:

$$U = W^h T^h - T' W T + 2 T' W T^d - T^d W T^d \quad (2)$$

* This paper was originally published under the title, "A Decision Model for Evaluating Thailand's Monetary Policy, 1960-67," in *Thai Economic Review*, Vol. 1, No. 1 (May 1971), pp. 32-58. The justification for inclusion of the paper in the present volume is that it might reflect the contribution of Khunying Suparb Yossundara to the formation of Thailand's monetary policy in the 1960's, the years when she and Dr. Puey Ungphakorn had been most active in the Bank of Thailand.

^{1/} A detailed and complete explanation of this type of model can be found in H. Theil, *Economic Forecasts and Policy*, Amsterdam, North-Holland Publishing Company, 1965, 2nd revised edition, pp. 372-538. See also H. Theil, "Linear Decision Rules for Macrodynamical Policy Problems," in Bert G. Hickman, ed., *Quantitative Planning of Economic Policy*, Washington, D.C., The Brookings Institution, 1965, pp. 18-42.

where T^h is an $(n-m) \times 1$ vector of "unbounded" target variables, i.e. the target variables which have preference expressed in linear form;

T is an $m \times 1$ vector of "bounded" target variables or target variables with quadratic preference;

T^d is an $m \times 1$ vector of desired value of the target variables;

W^h is an $1 \times (n-m)$ vector of the weights attached to T_j^h ; and

W is an $m \times m$ diagonal matrix of the weights attached to T_i .

With a given social welfare function, a policy maker maximizes the social welfare function according to his own view of the constraints imposed by the economy. The constraints may be described by a set of simultaneous linear equations, each of which relates to one of the target variables T_i or T_j^h , or to a set of predetermined variables consisting of policy instrumental variables and noncontrolled exogenous variables. The system of simultaneous equations may be written into two subsystems as follows:

$$T = AP + BE \quad (3.1)$$

$$T^h = A^hP + B^hE \quad (3.2)$$

where P is a $k \times 1$ vector of policy instrumental variables;

E is a $g \times 1$ vector of noncontrolled exogeneous variables;

A is an $m \times k$ matrix of coefficients of policy instrumental variables associated with "quadratic preference" target variables;

A^h is an $(n-m) \times k$ matrix of coefficients of the policy instrumental variables associated with "linear preference" target variables;

B is an $m \times g$ matrix of coefficients of noncontrolled variables associated with "quadratic preference" target variables; and

B^h is an $(n-m) \times g$ matrix of coefficients of noncontrolled variables associated with "linear preference" target variables.

Substituting (3.1) and (3.2) into (2) we get,

$$U = W^hA^hP + W^hB^hE - P'A'WAP - E'B'WAP - P'A'WBE - E'B'WBE + 2P'A'WT^d + 2E'B'WT^d - T^d'WT^d \quad (4)$$

Maximizing the social welfare function by taking partial derivatives with respect to the policy instrumental variables, P , and solving for the optimal strategy, P^0 , one gets:

$$P^0 = \frac{1}{2} (A'WA)^{-1} A^h'W^h' - (A'WA)^{-1} A'WBE + (A'WA)^{-1} A'WT^d \quad (5)$$

In order for the solution of P^0 to exist, the $k \times k$ matrix $A'WA$ must be nonsingular. Since A is $m \times k$ and W is $m \times m$ and the rank of a product cannot exceed the smallest of the ranks of the matrices being multiplied, the existence of a solution requires that $k \leq m$.

If $k = m$, it is also possible to find a solution of B or A . This may be shown by rewriting (5), in the following manner:

$$P^0 = X + YE + ZT^d \quad (6)$$

where $X = \frac{1}{2} (A'WA)^{-1} A^h'W^h'$; (6.1)

$$Z = (A'WA)^{-1} A'W = \frac{2}{A^h'W^h'} XA'W; \text{ and} \quad (6.2)$$

$$Y = - (A'WA)^{-1} A'WB = \frac{-2}{A^h'W^h'} XA'WB = - ZB \quad (6.3)$$

Multiplying both sides of (6.3) by Z' gives:

$$Z'Y = -Z'ZB$$

or
$$B = -(Z'Z)^{-1}Z'Y \quad (6.4)$$

Since $Z'Z$ is an $m \times m$ product of $m \times k$ and $k \times m$ matrices, the existence of a solution for B , i.e. the existence of the inverse of $Z'Z$, requires that $m = k$. Therefore the necessary condition for the existence of the inverse of $A'WA$ and of $Z'Z$ implies that $m = k$. With this necessary condition, the solution for B is reduced to:

$$B = -Z^{-1}(Z')^{-1}Z'Y = -Z^{-1}Y \quad (7)$$

If matrices Z , A and W are all squares and of the order $m \times m$, the solution for A may be derived from (6.2) as follows:

$$Z = (A'WA)^{-1}A'W = A^{-1}W^{-1}(A')^{-1}A'W = A^{-1}W^{-1}W = A^{-1}$$

or
$$A = Z^{-1} \quad (8)$$

Although it is possible to derive a solution for B or A , it is not possible, without additional knowledge, to derive the solution for W or W^h . The drawback of not knowing the weights attached to the separate targets may not be significant since the aim here is to find out how all the targets may be achieved simultaneously.

II. THAILAND'S MONETARY POLICY AND ECONOMIC DEVELOPMENT

The preceding was a formal presentation of a policy model. Now the application of such a model to the policy-making process of the Bank of Thailand is in order. Assume that the policy maker at the Bank of Thailand wants to maximize the incremental output or real income growth without facing inflation and the problem of a balance of payments or of losing foreign assets. To do this he has several instruments of monetary policy that he can employ. The most common among these are the legal reserve ratio, rediscount rates and government securities. Since the Bank of Thailand has changed the legal reserve ratio and rediscount rates only a few times during the post-Second World War period, it is more appropriate to consider the Bank's holdings of government securities as the most flexible and important instrument of the Thai monetary policy. The following analysis, therefore, will centre around the change in the quantity of government securities held by the Bank of Thailand as an indication of how the Bank pursues its policy objectives.

To make the government securities an effective instrument, the Bank has to maintain a minimum quantity of government securities at the Bank. This requirement, therefore, should be incorporated into the welfare function or policy utility function as a means by which the Bank wants to maximize its return. Together with the consideration of income growth, price stability, and accumulation of foreign assets, the holdings of government securities in terms of first difference may be stated in a welfare function in its general form as follows:

$$u_t = f [\Delta Y_t, \Delta FA_t, (\Delta P_t - \Delta P_t^d)^2, (\Delta GIS_{BOT,t} - \Delta GIS_{BOT,t}^d)^2/r_t^2] \quad (9)$$

where t is the subscript indicating time period;

Y is the aggregate output or real income;

FA is the level of gold and foreign exchange reserves;

P is the price index;

P^d is the desired price level;

r is the legal reserve ratio;

GIS_{BOT} is the holdings of Treasury bills and government bonds at the Bank of Thailand; and

GIS_{BOT}^d is the desired level of government securities holdings at the Bank of Thailand.

Note that the government securities holdings are adjusted for changes in the legal reserve ratio. The utility function can, therefore, be interpreted as having two policy instruments as a target variable.

The policy utility function (9) may be restated in the following specific form:

$$u_t = w_1^h \Delta Y_t + w_2^h \Delta FA_t - w_1 (\Delta P_t - \Delta P_t^d)^2 - w_2 (\Delta GIS_{BOT,t} - \Delta GIS_{BOT,t}^d)^2 / r_t^2 \quad (10)$$

where w_1^h , w_2^h , w_1 and w_2 are the weights of relative importance which the policy maker attaches to the target variables Y_t , FA_t , P_t and $GIS_{BOT,t}$ respectively.

The above utility function, (10), implies that there are no upper limits to the desire for increasing income and foreign assets. The policy maker wants to see Thailand reaching the highest income attainable and accumulating the largest amount of foreign assets as possible. As for changes in the price level and the holdings of government securities, the policy maker has set up a certain limit beyond which it is considered undesirable. Furthermore, if he wants absolute stability in prices and securities holdings, ΔP_t^d and $\Delta GIS_{BOT,t}^d$ may be assumed to take on a zero value and the utility function becomes:

$$u_t = w_1^h \Delta Y_t + w_2^h \Delta FA_t - w_1 (\Delta P_t)^2 - w_2 (\Delta GIS_{BOT,t})^2 / r_t^2 \quad (11)$$

With this utility function in mind, the policy maker then seeks to maximize his utility or society's welfare by taking into account the existing economic structure as he sees it. Assume that he makes his decision according to direction or qualitative changes of a number of noncontrolled variables in terms of "plus" or "minus" signs, rather than the quantitative changes of these variables. This latter reason leads us to formulate the model by using variables in terms of their first differences. The economic structure, as seen by the policy maker, therefore, may be presented as follows:

$$\Delta Y_t = f[\Delta(\frac{ER_t}{r_t}), \Delta BB_t, \Delta BT_t, \Delta Y_{t-1}, \Delta FA_{t-1}, \Delta P_{t-1}, e_1] \quad (12.1)$$

$$\Delta FA_t = f[\Delta(\frac{ER_t}{r_t}), \Delta BB_t, \Delta BT_t, \Delta Y_{t-1}, \Delta FA_{t-1}, \Delta P_{t-1}, e_2] \quad (12.2)$$

$$\Delta P_t = f[\Delta(\frac{ER_t}{r_t}), \Delta BB_t, \Delta BT_t, \Delta Y_{t-1}, \Delta FA_{t-1}, \Delta P_{t-1}, e_3] \quad (12.3)$$

where ER is the excess reserves or free reserves of commercial banks, which the Bank of Thailand wishes to influence in order to achieve the target,

BB is the government budget surplus,

BT is the trade surplus, and

e_1, e_2, e_3 , are stochastic disturbances.

The above structural equations form essentially a recursive model which has the advantage of interpreting dynamic economic relationships.^{2/} In Theil's original model, reduced-form equations are used as constraints in maximizing welfare or policy utility. In the present study, original structural equations as viewed by the policy maker are used instead. Since the present model is a "recursive" one with the target variables not

^{2/} See R.H. Strotz and H.O.A. Wold, "Recursive vs. Non-recursive System: An Attempt at Synthesis (Part I of A Triptych on Causal Chain Systems)," *Econometrica*, Vol. 28, No. 2 (April 1960), pp. 417-427.

related to each other in the same time period, Theil's reasons for using reduced-form equations are retained.^{3/}

Before proceeding further, it may be useful to inspect the probable property of the partial derivative of each target variable with respect to the relevant predetermined variable in the right-hand side of the equations. It is probably a reasonable guess, at least at first glance, that a further increase in the excess reserves of commercial banks adjusted for the change in legal reserve ratio, $\frac{ER_t}{r_t}$, would, other things being equal, lead commercial banks to pursue an easy credit policy which would bring down the cost of the investment fund. If the economy is operating below its full capacity or full employment level and there is an optimistic investment climate, there would be an acceleration in output expansion or real income growth. The increase in investment activities would also mean a more intense competition for factors of production both produced domestically and abroad. Consequently, domestic prices would rise even faster and the country would lose some of its foreign exchange reserves to pay for imports of capital goods and raw materials. The increment of foreign exchange reserves due to international trade, if any, is bound to be less than the increment in the previous period. This situation may be expressed by:

$$\frac{\partial \Delta Y_t}{\partial \Delta \left(\frac{ER_t}{r_t}\right)} > 0, \quad \frac{\partial \Delta FA_t}{\partial \Delta \left(\frac{ER_t}{r_t}\right)} < 0, \quad \text{and} \quad \frac{\partial \Delta P_t}{\partial \Delta \left(\frac{ER_t}{r_t}\right)} > 0.$$

If the country is in a period of full employment or full capacity, the values of $\left| \frac{\partial \Delta FA_t}{\partial \Delta \left(\frac{ER_t}{r_t}\right)} \right|$ and $\left| \frac{\partial \Delta P_t}{\partial \Delta \left(\frac{ER_t}{r_t}\right)} \right|$ would be larger but that of $\left| \frac{\partial \Delta Y_t}{\partial \Delta \left(\frac{ER_t}{r_t}\right)} \right|$ would be much smaller.

If there is a pessimistic investment climate, the increase in adjusted excess reserves would probably have very little effect on income, prices and foreign assets.

An increase in the government budget surplus following the previous increase both at the time of full-employment and under-employment would generally slow down the price increase and would have a contracting effect on income growth, but it may accelerate the increase of foreign assets since part of the surplus may be due to the cutback of government spending on foreign goods and services so that $\frac{\partial \Delta P_t}{\partial \Delta BB_t} < 0$, $\frac{\partial \Delta Y_t}{\partial \Delta BB_t} < 0$ and $\frac{\partial \Delta FA_t}{\partial \Delta BB_t} > 0$. However, if the budget surplus is a result of a faster increase in government revenues relative to government expenditure, due mainly to an accelerated increase in import and export taxes by which some of the tax burden may be shifted abroad, then the deflationary effect of the budget surplus could also be shifted outside the country. Moreover, if the increase in government spending is mostly on domestic products, a government budget surplus may produce an inflationary effect on the domestic economy, i.e. $\frac{\partial \Delta P_t}{\partial \Delta BB_t}$ could be positive. This phenomenon would also produce an ex-

^{3/} Theil feels that "what really matters for the decision process is that constraint implied by the structural equations, and that this constraint is represented by any combination of these equations in precisely the same way as by the equations themselves, the reduced form being one of such combinations..." the equation system is usually of an aggregated type, and that perfect aggregation is in principle attainable for the reduced form..." See Theil, *op.cit.*, pp. 404-405. In a recursive model, there is no problem of combination and aggregation. The structural equations are, therefore, appropriate constraints.

pansionary effect on income, i.e. $\frac{\partial \Delta Y_t}{\partial \Delta BB_t} > 0$, especially if the country is in an "optimistic" and under-employment situation. A similar case may develop if the tax burden were borne by the country's depressed sector, whereas the expenditures are concentrated in the booming sector of the economy.

An increase in the rate of trade surplus would definitely increase a country's foreign assets, so $\frac{\partial \Delta FA_t}{\partial \Delta BT_t} > 0$. If the increased surplus is a result of export expansion, there would be an inducement to further increase the domestic production and income. Again this effect is especially strong when the economy is at the under-employment level. Generally speaking, the impact of an accelerated increase in trade surplus on prices and income would be about the same as that of a growing excess reserve of the commercial banks, that is $\frac{\partial \Delta P_t}{\partial \Delta BT_t} > 0$, and $\frac{\partial \Delta Y_t}{\partial \Delta BT_t} > 0$. If the trade surplus is caused by cutting back imports, an unlikely case for Thailand, $\frac{\partial \Delta P_t}{\partial \Delta BT_t}$ would still be positive since the demand for foreign goods would shift to domestic goods. $\frac{\partial \Delta Y_t}{\partial \Delta BT_t}$ may also be positive since there could be an increase in the production of domestic import-competing goods, but the magnitude would probably be much less than the previous case since a distortion of the optimum resource allocation may prevail.

An acceleration in income would provide an optimistic investment climate when the economy still had some excess capacity and would further increase the real income of the country. Foreign assets would probably be used to finance capital goods and raw materials from foreign countries. And as a result of the previous expansion in production or aggregate supply, it is possible that a deflationary process may emerge and actually cause a fall in the general price level. Therefore $\frac{\partial \Delta Y_t}{\partial \Delta Y_{t-1}} > 0$, $\frac{\partial \Delta FA_t}{\partial \Delta Y_{t-1}} < 0$ and $\frac{\partial \Delta P_t}{\partial \Delta Y_{t-1}} < 0$. Under a full-employment situation, the signs of $\frac{\partial \Delta Y_t}{\partial \Delta Y_{t-1}}$ and $\frac{\partial \Delta FA_t}{\partial \Delta Y_{t-1}}$ could be reversed, but that of $\frac{\partial \Delta P_t}{\partial \Delta P_{t-1}}$ would most likely be the same except with a smaller absolute value.

Similar to the effect of an increase in income, a further rise of the general price level would also create an optimistic atmosphere for investment and thus, under the condition of under-employment, there would be a further increase in income and a decrease in the accumulation of foreign assets. Also, an increase in the price level would also mean that there exists an excess demand inside the country. If the excess demand is partially met by imports, the country's foreign exchange reserves would certainly be even further reduced. This situation may be expressed by: $\frac{\partial \Delta Y_t}{\partial \Delta P_{t-1}} > 0$ and $\frac{\partial \Delta FA}{\partial \Delta P_{t-1}} < 0$. However, the influence of a price increase on the current price level is a less certain phenomenon. It depends to a great extent on how society interprets the increase in prices. If society believes that the increase has reached its ceiling and expects a fall in prices, society may delay some of the spending until a later period. By delaying, the realized aggregate demand would be slackened and the price level would actually decline or increase at a slower rate regardless of the economy being at full-employment

or not, i.e. $\frac{\partial \Delta P_t}{\partial \Delta P_{t-1}} < 0$. This would generate a pessimistic atmosphere and $\frac{\partial \Delta Y_t}{\partial \Delta P_{t-1}}$ may be negative whereas $\frac{\partial \Delta FA}{\partial \Delta P_{t-1}}$ may become positive. If society believes otherwise, an upward spiral of price movement may develop so that $\frac{\partial \Delta P_t}{\partial \Delta P_{t-1}}$ becomes positive and $\left| \frac{\partial \Delta P_t}{\partial \Delta P_{t-1}} \right|$ would be larger in a time of full-employment than in a time of under-employment.

The increase of foreign assets may be viewed as having an expansionary effect on income as well as a deflationary effect on prices because an increase in foreign assets could be used to increase a country's productive capacity and to relieve pressure from domestic excess demand by importing capital and consumption goods from abroad. Therefore $\frac{\partial \Delta Y_t}{\partial \Delta FA_{t-1}} > 0$ and $\frac{\partial \Delta P_t}{\partial \Delta FA_{t-1}} < 0$. The expansionary and deflationary effects would be greater in the case of under-employment than in full employment.

But if a country follows a policy of promoting import competing industries by encouraging imports of capital goods, and at the same time discouraging imports of consumers' goods, $\frac{\partial \Delta P_t}{\partial \Delta FA_{t-1}}$ could be positive because the increased foreign capital goods would accelerate the demand for complementary factors of production available domestically, and a "cost-push" type of price rise may develop. Under this policy, the rate of a price increase would be larger in a full-employment economy than in an under-employment economy. $\frac{\partial \Delta P_{t-1}}{\partial \Delta FA_{t-1}}$ would also be positive if the objective of a country's foreign exchange policy is to build up a large foreign exchange reserve as a safety valve against the fluctuation in foreign exchange rates.

But in this case, the increase in income would be decelerated if the priority of maintaining large foreign assets is higher than that of expanding domestic productive capacity by foreign trade, i.e. $\frac{\partial \Delta Y_t}{\partial \Delta FA_{t-1}} < 0$. The deceleration in income, other things being equal, would be more serious in a full-employment economy than in economy with excess capacity or under-employment.

The property of $\frac{\partial \Delta FA_t}{\partial \Delta FA_{t-1}}$, however, cannot be easily established. A guess may be put forward that an increase in foreign assets may encourage a country to carry out a more liberal foreign exchange policy so that the ratio of the current increase in foreign assets may be smaller than the previous increase, i.e. $\frac{\partial \Delta FA_t}{\partial \Delta FA_{t-1}} < 0$.

To linearize the structural equations (12.1), (12.2) and (12.3), and to assign proper mathematical signs to the coefficients, as examined above, is a most exhaustive endeavour. For illustration purposes, it may be convenient to hypothetically set up four different types of economies and see how the signs may be applied to the coefficients under four different sets of assumptions.

Let a type I economy be a nearly full-employment economy with an optimistic investment climate and having an inflationary consumer expectation about prices. The government of a type I economy has a fiscal policy which aims at stabilizing fluctuation

in income and prices and a commercial policy which aims at promoting import-competing industries inside the country. A type II economy has under-employment, a pessimistic investment climate and a non-inflationary consumer expectation. The government of a type II economy maintains a stabilization fiscal policy and a commercial policy which is neutral as far as importation of capital goods and consumer goods is concerned. A type III economy has an under-employment situation, but the investment attitude is optimistic and the consumers do not expect an acceleration in price increases. The government in a type III economy pursues an "import-competing" commercial policy together with a fiscal policy which is inflationary in effect. A type IV economy is at near full employment level with a pessimistic investment atmosphere, and a non-inflationary expectation of price movements. The government of a type IV economy carries out a "neutral" commercial policy and a "stabilization" fiscal policy.

With the previous analysis of the property of partial derivatives, it may be shown that the following structural equations (13), (14), (15) and (16) may best represent type I, II, III and IV economies respectively:

Type I Economy :

$$\begin{bmatrix} a_{11}^h & -b_{11}^h & -b_{12}^h & -b_{13}^h & 0 & b_{15}^h & 1 & 0 & 0 \\ -a_{21}^h & b_{21}^h & b_{22}^b & b_{23}^h & -b_{24}^h & -b_{25}^h & 0 & 1 & 0 \\ a_{31} & -b_{31} & b_{32} & -b_{33} & b_{34} & b_{35} & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \Delta \left(\frac{ER_t}{r_t} \right) \\ \Delta BB_t \\ \Delta BT_t \\ \Delta Y_{t-1} \\ \Delta P_{t-1} \\ \Delta FA_{t-1} \\ e_{1t} \\ e_{2t} \\ e_{3t} \end{bmatrix} = \begin{bmatrix} \Delta Y_t \\ \Delta FA_t \\ \Delta P_t \end{bmatrix} \quad (13)$$

Type II Economy :

$$\begin{bmatrix} -a_{11}^h & -b_{11}^h & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ -a_{21}^h & b_{21}^h & b_{22}^b & 0 & b_{24}^h & -b_{25}^h & 0 & 1 & 0 \\ a_{31} & -b_{31} & b_{32} & -b_{33} & -b_{34} & -b_{35} & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \Delta \left(\frac{ER_t}{r_t} \right) \\ \Delta BB_t \\ \Delta BT_t \\ \Delta Y_{t-1} \\ \Delta P_{t-1} \\ \Delta FA_{t-1} \\ e_{1t} \\ e_{2t} \\ e_{3t} \end{bmatrix} = \begin{bmatrix} \Delta Y_t \\ \Delta FA_t \\ \Delta P_t \end{bmatrix} \quad (14)$$

Type III Economy :

$$\begin{bmatrix} a_{11}^h & b_{11}^h & b_{12}^h & b_{13}^h & b_{14}^h & b_{15}^h & 1 & 0 & 0 \\ -a_{21}^h & -b_{21}^h & b_{22}^h & -b_{23}^h & -b_{24}^h & -b_{25}^h & 0 & 1 & 0 \\ a_{31} & b_{31} & b_{32} & -b_{33} & -b_{34} & b_{35} & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \Delta \left(\frac{ER_t}{r_t} \right) \\ \Delta BB_t \\ \Delta BT_t \\ \Delta Y_{t-1} \\ \Delta P_{t-1} \\ \Delta FA_{t-1} \\ e_{1t} \\ e_{2t} \\ e_{3t} \end{bmatrix} = \begin{bmatrix} \Delta Y_t \\ \Delta FA_t \\ \Delta P_t \end{bmatrix} \quad (15)$$

Type IV Economy :

$$\begin{bmatrix} -a_{11}^h & -b_{11}^h & 0 & -b_{13}^h & 0 & 0 & 1 & 0 & 0 \\ -a_{21}^h & b_{21}^h & b_{22}^h & 0 & b_{24}^h & -b_{25}^h & 0 & 1 & 0 \\ a_{31} & -b_{31} & b_{32} & -b_{33} & -b_{34} & -b_{35} & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \Delta \left(\frac{ER_t}{r_t} \right) \\ \Delta BB_t \\ \Delta BT_t \\ \Delta Y_{t-1} \\ \Delta P_{t-1} \\ \Delta FA_{t-1} \\ e_{1t} \\ e_{2t} \\ e_{3t} \end{bmatrix} = \begin{bmatrix} \Delta Y_t \\ \Delta FA_t \\ \Delta P_t \end{bmatrix} \quad (16)$$

where a_{ij}^h is the coefficient attached to a policy variable associated with a "linear preference" target variable,

a_{ij} is the coefficient attached to a policy variable associated with a "quadratic preference" target variable,

b_{ij}^h is the coefficient attached to a noncontrolled variable associated with a "linear preference" target variable,

b_{ij} is the coefficient attached to a noncontrolled variable associated with a "quadratic preference" target variable.

Note that the structural equations (13), (14), (15), and (16) do not directly include the policy instrument, i.e. government security holdings at the Bank of Thailand. The next step then is to introduce such a variable into the structural equations. This can be done by starting from the statement of the Bank of Thailand's assets and liabilities which is as follows:

$$GIS_{BOT,t} + A_{BOT,t}^o \equiv D_{BOT,t}^{CB} + L_{BOT,t}^o \quad (17)$$

where GIS_{BOT} is the value of Treasury bills and government bonds held by the Bank of Thailand

A_{BOT}^o is the value of other assets of the Bank of Thailand besides GIS_{BOT}

D_{BOT}^{CB} is the commercial banks' deposits at the Bank of Thailand

L_{BOT}^o is the value of other liabilities of the Bank of Thailand besides D_{BOT}^{CB} .

$$\text{Since } TR_t \equiv RR_t + ER_t \equiv D_{BOT,t}^{CB} + R_{CB,t} \quad (18)$$

where TR is the total reserves of commercial banks,

RR is the required reserves of commercial banks,

R_{CB} is the commercial banks' reserves which are not kept at BOT,

therefore,

$$D_{BOT,t}^{CB} \equiv RR_t + ER_t - R_{CB,t} \quad (19)$$

Substituting (19) into (17) we get:

$$GIS_{BOT,t} + A_{BOT,t}^o \equiv RR_t + ER_t - R_{CB,t} + L_{BOT,t}^o \quad (20)$$

$$\text{or } ER_t \equiv GIS_{BOT,t} + (A_{BOT,t}^o - L_{BOT,t}^o) + R_{CB,t} - RR_t \quad (21)$$

Adjusting the excess reserves by dividing (21) by the legal reserve ratio we get:

$$\frac{ER_t}{r_t} \equiv \frac{GIS_{BOT,t}}{r_t} + \frac{1}{r_t} (A_{BOT,t}^o - L_{BOT,t}^o) + \frac{R_{CB,t}}{r_t} - \frac{RR_t}{r_t} \quad (22)$$

Subtracting $\frac{ER_{t-1}}{r_{t-1}}$ from both sides of (22), we get:

$$\Delta \left(\frac{ER_t}{r_t} \right) \equiv \frac{\Delta GIS_{BOT,t}}{r_t} + AL_{BOT,t}^a \quad (23)$$

$$\text{where } AL_{BOT,t}^a \equiv \frac{1}{r_t} [\Delta A_{BOT,t}^o - \Delta L_{BOT,t}^o + \Delta R_{CB,t} - \Delta RR_t - \frac{\Delta r_t ER_{t-1}}{r_{t-1}}]$$

Substituting (23) into the structural system (13) of a type I economy we get:

$$\begin{bmatrix} a_{11}^h & -b_{11}^h & -b_{12}^h & -b_{13}^h & 0 & b_{15}^h & 1 & 0 & 0 \\ -a_{21}^h & b_{21}^h & b_{22}^h & b_{23}^h & -b_{24}^h & -b_{25}^h & 0 & 1 & 0 \\ a_{31} & -b_{31} & b_{32} & -b_{33} & b_{34} & b_{35} & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \frac{\Delta GIS_{BOT,t}}{r_t} + AL_{BOT,t}^a \\ \Delta BB_t \\ \Delta BT_t \\ \Delta Y_{t-1} \\ \Delta P_{t-1} \\ \Delta FA_{t-1} \\ e_{1t} \\ e_{2t} \\ e_{3t} \end{bmatrix} = \begin{bmatrix} \Delta Y_t \\ \Delta FA_t \\ \Delta P_t \end{bmatrix} \quad (24)$$

Substituting (24) into the welfare function (11) we get:

$$\begin{aligned} u_t = & -w_2 \frac{1}{r_t^2} (\Delta GIS_{BOT,t})^2 - w_1 \frac{a_{31}^2}{r_t^2} (\Delta GIS_{BOT,t})^2 + \frac{\Delta GIS_{BOT,t}}{r_t} [w_1^h a_{11}^h \\ & - w_2^h a_{21}^h - 2w_1 a_{31}^2 AL_{BOT,t}^a + 2w_1 a_{31} b_{31} \Delta BB_t - 2w_1 a_{31} b_{32} \Delta BT_t \\ & + 2w_1 a_{31} b_{33} \Delta Y_{t-1} - 2w_1 a_{31} b_{34} \Delta P_{t-1} - 2w_1 a_{31} b_{35} \Delta FA_{t-1} - 2w_1 a_{31} e_{3t}] \\ & - w_1^2 a_{31}^2 AL_{BOT,t}^a - \dots + w_1^h a_{11}^h AL_{BOT,t}^a - \dots + w_2^h a_{21}^h AL_{BOT,t}^a \\ & +, \dots, - w_1 e_{3t} \end{aligned} \quad (25)$$

Differentiating (25) with respect to $GIS_{BOT,t}$:

$$\begin{aligned} \frac{d u}{d GIS_{BOT,t}} = & -\frac{2w_2}{r_t^2} \Delta GIS_{BOT,t} - \frac{2w_1 a_{31}^2}{r_t^2} \Delta GIS_{BOT,t} + \frac{w_1^h a_{11}^h - w_2^h a_{21}^h}{r_t} \\ & - \frac{2w_1 a_{31}^2}{r_t} AL_{BOT,t}^a + \frac{2w_1 a_{31} b_{31}}{r_t} \Delta BB_t - \frac{2w_1 a_{31} b_{32}}{r_t} \Delta BT_t \\ & + \frac{2w_1 a_{31} b_{33}}{r_t} \Delta Y_{t-1} - \frac{2w_1 a_{31} b_{34}}{r_t} \Delta P_{t-1} - \frac{2w_1 a_{31} b_{35}}{r_t} \Delta FA_{t-1} \\ & - \frac{2w_1 a_{31}}{r_t} e_{3t} \end{aligned} \quad (26)$$

Setting equation (26) equal to zero and deriving the optimal strategy, $\Delta GIS_{BOT,t}^0$:

$$\begin{aligned} \Delta GIS_{BOT,t}^0 = & X_1 r_t - X_2 r_t AL_{BOT,t}^a + X_3 r_t \Delta BB_t - X_4 r_t \Delta BT_t + X_5 r_t \Delta Y_{t-1} \\ & - X_6 r_t P_{t-1} - X_7 r_t \Delta FA_{t-1} + V_t \end{aligned} \quad (27)$$

where $X_1 = \frac{w_1^h a_{11}^h - w_2^h a_{21}^h}{2w_2 + 2w_1 a_{31}^2}$, $X_2 = \frac{w_1 a_{31}^2}{w_2 + w_1 a_{31}^2}$, $X_3 = \frac{w_1 a_{31} b_{31}}{w_2 + w_1 a_{31}^2}$, $X_4 = \frac{w_1 a_{31} b_{32}}{w_2 + w_1 a_{31}^2}$,
 $X_5 = \frac{w_1 a_{31} b_{33}}{w_2 + w_1 a_{31}^2}$, $X_6 = \frac{w_1 a_{31} b_{34}}{w_2 + w_1 a_{31}^2}$, $X_7 = \frac{w_1 a_{31} b_{35}}{w_2 + w_1 a_{31}^2}$ and V_t is a term associated with

the relevant stochastic disturbances, i.e. $V_t = -\frac{w_1 a_{31}}{w_2 + w_1 a_{31}^2} r_t e_{3t}$.

By inspecting the signs in front of each coefficient in the right hand side of the equation (27) one sees that the maximization of the utility or welfare function (11), subject to the structural equation of a type I economy, would give the following consecutive signs with respect to the variables on the right hand side of the optimal strategy equation (27): $(+, -, +, -, +, -, -)$.^{4/} The first sign could be "+" or "-" depending on $w_1^h a_{11}^h > w_2^h a_{21}^h$ or $w_2^h a_{21}^h > w_1^h a_{11}^h$.

Similarly, it may be shown that the structural equations of type II, III and IV economies would yield the following three sets of signs: $(+, -, +, -, +, +, +)$ for a type II economy; $(+, -, -, -, +, +, -)$ for a type III economy; and $(+, -, +, -, +, +, -)$ for a type IV economy.

Now our task is to verify if the policy maker at the Bank of Thailand, knowingly or unknowingly, has been conducting a monetary policy within the framework presented above. Since there are eight independent and dependent variables in equation (27), it is not possible to use the available annual data of each variable without risking the problem of the degree of freedom. The large number of the variables in equation (27) require a large number of observations in order to have a reliable estimate of the relation. This problem is solved by using monthly data.

The time period covered by the present study is from January 1960 to December 1967 which yields 96 monthly observation points. Taking the first difference of each variable, the observations reduce to 95. In order to smooth out irregularity in each series, seven months of moving averages were performed on each series. This further

^{4/} The sign of V_t -term is not included.

reduced the observations to 89. Since some of the independent variables have a one-month lag, the number of observations were finally reduced to 88. Although it is possible to obtain monthly data for the Bank of Thailand's holdings of government budget surpluses or deficits, balance of trade, foreign assets and price indices, the income data are available only in annual values. The monthly income data, therefore, has to be estimated from a relationship with other variables which are available both on a monthly and a yearly basis. One of such variables is the total debits to deposits at commercial banks.^{5/}

It is reasonable to believe that an expansion of the total debits in relation to deposits would mean an increase in economic activities and consequently an increase in income. Using the 1960–1967 annual data, the following statistical relationship between the gross national product, the GDP, and total debits to deposits, the TDD, can be established :

$$\text{GDP (current prices)}_t = 37576.71 + 0.2455 \text{ TDD}_t \quad R^2 = .999 \quad d = 2.445 \\ (1624.21) \quad (0.0096) \quad (28)$$

$$\text{GDP (1962 prices)}_t = 46279.27 + 0.1879 \text{ TDD}_t \quad R^2 = .959 \quad d = 1.286 \\ (2479.00) \quad (0.0146) \quad (29)$$

where GDP and TDD are in terms of millions of baht.^{6/}

Both equations give a very high statistical fit. Over 95% of the variation in the GDP, both in terms of current and 1962 constant prices, may be explained by TDD. The R-squares adjusted for a degree of freedom in both cases are higher than .95. The standard errors of the regression coefficients and the constant terms as shown in the parentheses indicate that all the estimates are significant at .5% level.

Although equations (28) and (29) pass all the necessary statistical tests, there is a problem of using the relations to estimate the monthly GDP. If it is assumed that the monthly value of TDD is almost nil, the relation (28) would give a monthly estimate of the GDP with a value around 37 billion baht or an annual value of 444 billion baht, whereas the actual annual value of the GDP is only around 100 billion baht.

The same absurd estimate is due to the large constant terms in relations (28) and (29). If the constant terms are suppressed, the relations no longer have good statistical properties :

$$\text{GDP (current prices)}_t = .4490 \text{ TDD}_t \quad R^2 = .186 \quad d = .250 \\ (.0330) \quad (30)$$

$$\text{GDP (1962 prices)}_t = .4384 \text{ TDD}_t \quad R^2 = .186 \quad d = .267 \\ (.0330) \quad (31)$$

An alternative way of estimating the monthly GDP is to use the quantity theory

^{5/} Ta-Chung Liu has estimated a monthly series of the gross national product of the U.S. from total manufacturing and trade sales, wage and salary disbursements by the governments, wage and salary disbursements of "service industries" plus rental income of persons. See Ta-Chung Liu, "A Monthly Recursive Econometric Model of the United States: A Test of Feasibility," *Review of Economics and Statistics*, Vol. 51, No. 1 (Feb, 1969), pp. 1–13.

^{6/} Judging from the Durbin-Watson d statistic, it is clear that one cannot accept the hypothesis of autocorrelation in (28) and (29) at 1% level of significance.

of money approach. From the definition of income velocity V_y , the monthly GDP may be estimated from^{7/}:

$$\text{GDP} = V_y \cdot M \quad (32)$$

where M is the money supply defined as currency held by the public plus demand deposits held by the public.

The statistical estimates^{8/} of the relation (32), using 1960-1967 annual data, are as follows:

$$\text{GDP (current prices)}_t = .5062 \sum_{i=1}^{12} M_{ti} \quad R^2 = .983 \quad d = .724 \quad (33)$$

(.0053)

$$\text{GDP (1962 prices)}_t = .4994 \sum_{i=1}^{12} M_{ti} \quad R^2 = .926 \quad d = 1.060 \quad (34)$$

(.0085)

where GDP is the annual data in terms of million baht, and M is the monthly money supply in terms of million baht.

The R-squares of the above equations are quite high. All the coefficients passed the t-test at the .5% level. While it is possible that positive serial correlation exists in equation (33), the Durbin-Watson d statistic, at the 2.5% and 1% levels, shows an inconclusive test of positive serial correlation in equation (34). The existence of positive serial correlation means that the standard error estimates are biased downward and R^2 is biased upward. But, for the purpose of estimating monthly GDP, equation (34) does not pose any serious problems, statistically speaking.

Furthermore, for testing the model presented in equation (21), the monthly GDP from equation (34) is closer to representing real income than the GDP at current prices as shown in (33). To use GDP at current prices as real income, the data would have to be deflated by a price index, and equation (34), therefore, gives a more direct approximation of real income. Ideally, of course, net national product or national income at constant prices gives a much better approximation of real income than gross domestic product. Unfortunately, the net national product or national income at constant prices is not available at the present time.

^{7/} In another context, Milton Friedman and David Meiselman have shown that the income velocity is relatively stable for the United States and imply that M could be used as an explanatory variable of GDP. See Milton Friedman and David Meiselman, "Research Study Two: The Relative Stability of Monetary Velocity and the Investment Multiplier in the United States, 1897-1958," in Commission on Money and Credit of the U.S., *Stabilization Policies*, Englewood Cliffs, N.J., Prentice-Hall for the Commission on Money and Credit, 1963, pp. 165-268. Although there has been much controversy regarding the appropriateness of using the single-equation model and some of the major variables in their study, their framework is very useful for estimating monthly GDP. For controversy on Friedman-Meiselman model see Albert Ando and Franco Modigliani, "The Relative Stability of Monetary Velocity and the Investment Multiplier," *American Economic Review*, Vol. 55, No. 4 (September 1965), pp. 693-728; Michael DePrano and Thomas Mayer, "Test of the Relative Importance of Autonomous Expenditures and Money," *American Economic Review*, Vol. 55, No. 4 (September 1965), pp. 729-752; Milton Friedman and David Meiselman, "Reply to Ando and Modigliani and to DePrano and Mayer," *American Economic Review*, Vol. 55, No. 4 (September 1965), pp. 753-785; Donald D. Hester, "Keynes and the Quantity Theory: A Comment on the Friedman-Meiselman CMC Paper," *Review of Economics and Statistics*, Vol. 46, No. 4 (November 1964), pp. 369-376.

^{8/} For practical purposes, the statistical relation used here is not the same as that of Friedman-Meiselman. In the Friedman-Meiselman study, the constant terms in the equations are not suppressed. In the present study, the constant terms are suppressed. The assumption of the stability in income velocity, however, is still required.

Turning to the testing of equation (27). It is quite interesting to see that the policy model and the chosen data fit very well together. The equation (27) is as follows:

$$\begin{aligned} \Delta \text{GIS}_{\text{BOT},t}^{\circ} = & 56.5213 - 774.1246 r_t - 1.0161 r_t \text{AL}_{\text{BOT},t}^a \\ & (11.7495) \quad (171.5185) \quad (.0266) \\ & -3.9401 r_t \Delta \text{BB}_t - 1.7398 r_t \Delta \text{BT}_t \\ & (.6825) \quad (.7503) \\ & +3.1296 r_t \Delta Y_{t-1} + 189.1602 r_t \Delta P_{t-1} \\ & (.8300) \quad (56.1803) \\ & -.0264 r_t \Delta \text{FA}_{t-1} - 7.1722 D_t \\ & (.0104) \quad (3.7456) \\ R^2 = & .949 \quad d = 1.564 \end{aligned} \quad (35)$$

where $\Delta \text{GIS}_{\text{BOT},t}^{\circ}$, $\text{AL}_{\text{BOT},t}^a$, ΔBB_t , ΔBT_t , ΔY_{t-1} and ΔFA_{t-1} are in terms of million baht. ΔP_{t-1} is in terms of percentage points, and r_t is in terms of one hundredth of a percentage point. D_t is a dummy variable which is equal to zero between May 1960 to May 1964. After May 1964, it has a value of one. The dummy variable is employed because of the different series of price indices used in equation (35).

Before June 1964, the price index used in the estimation is the cost of living index; after May 1964, it is the consumer price index. The cost of living index was replaced by the consumer price index in 1964 and there is no such index available after December 1964. Furthermore, the two indices, although one replaced the other, are not entirely consistent with each other. To solve this problem the above dummy variable has to be used.

Equation (35) indicates that 95% of the changes in the Bank of Thailand's holdings of government bonds and Treasury bills could be the result of changes in the government budget deficit, trade deficit, income levels, price levels and accumulation of foreign exchanges and gold stocks as well as the Bank's policy concerning legal reserve ratios and the net holdings of other assets. The standard errors of the estimates in the equation show that all the coefficients, except that of $r_t \Delta \text{BT}_t$, pass the t -test at a 1% level of significance. In the case of $r_t \Delta \text{BT}_t$, it passes the test at the 2.5% level. One may also conclude, according to the Durbin-Watson d statistic, that there is no serial correlation at the 1% level of significance.

Inspecting the signs of the coefficients, it can be seen that these signs coincide with those of a type III economy mentioned earlier, i.e.: $\pm, -, -, -, +, +, +, -$. A tentative conclusion of the present study is that it is not possible to reject the hypothesis that the policy maker at the Bank of Thailand does use one of his policy instruments, i.e. government securities, to maximize his policy utility function or social welfare function which is defined in terms of price stability as well as growth in income and foreign assets. He maximizes the said welfare function according to his view of the Thai economy. The characteristics of the Thai economy during the 1960-1967 period, in his opinion, may include an optimistic investment climate, a non-inflationary consumer expectation about prices, an excess capacity or under-employment, an inflationary fiscal policy and a commercial policy which encourages the expansion of "import-competing" industries inside the country.

To some extent, his view of the Thai economy could very well be correct. The Thai government's policy of encouraging import-competing industries has already been

described elsewhere.^{9/} It is not necessary to re-emphasize the government's efforts here. As for the optimistic investment climate, it may have been created by the war in Vietnam and the building of military bases in Thailand. On the production side, the investment activities may be induced by the expansion of social capital, such as highways and hydroelectric power, which has brought down the cost of production to some degree. The idea of an optimistic investment climate may be substantiated by observing the high compound growth rate of the total net investment which was 12.3% in the 1960–1967 period. The compound growth rate of the investment-net product ratio in the same period is 4.6%, which is also high enough to validate the hypothesis of an optimistic investment climate. The theory of a non-inflationary consumers' psychology can be justified on the grounds that in the earlier years of the study, i.e. 1960–1965, the average increase in the consumer price index was only 1.2% per year.^{10/}

In the 1966–1967 period, however, the average price increase was tripled at 4% per year. Because of this, an inflationary psychology could be developed in this later period. But taking the entire eight year period, it is reasonable to say that the inflationary psychology may be cancelled by the more persistent non-inflationary psychology in the earlier years. The overall picture of the economy could, therefore, be noninflationary.

The theories of excess capacity or under-employment are quite difficult to assess objectively due to the lack of relevant data. The multi-purpose Bhumibol Dam which started its operation in May 1964 may account for some of the excess capacity in the country. Calculated from the statistics presented by the Department of Labour, the ratio between jobs and applications for employment between 1960 and 1964 is around 0.6—only three out of five persons who looked for jobs could find one.^{11/} This ratio may underestimate the unemployment problem of Thailand as far as unskilled labour is concerned since the ratio is only applicable to those who sought employment through the Employment Service Section of the Department of Labour. On the other hand, it is not quite clear to what extent the ratio represents the seasonal unemployment. Given that there is plenty of unskilled labour available for further increase in productive activities, one cannot objectively say that there is also sufficient skilled labour available.

The theory of excessive capacity can also be looked at from the point of view of the availability of an investment fund. The excess reserves of the commercial banks increased from a monthly average of 160 million baht in 1960 to 240 million baht in 1964 and finally to 390 million baht in 1967. The net inflow of private capital from abroad is also impressive in the first half of the eight year period. It increased from 500 million baht in 1960 to 1,760 million in 1963. But since 1963 the capital inflow dropped quite substantially until 1965 when it increased again and reached the level of 1,700 million baht in 1967.^{12/} The erratic nature of these two series prevents one from drawing a concrete conclusion about the availability of excess capital in the economy. Comparing the compound growth rates of the monthly excess reserves, (12.0%), and net foreign

^{9/} See for example, Warin Wonghanchao, "Impact of Foreign Trade and Government Policies on Economic Growth and Development of Thailand, 1955–1967," (unpublished Ph.D. Thesis, Cornell University, 1970), pp. 233–238.

^{10/} The consumer price index with 1962=100, for 1960 to 1967 is: 96.4, 97.6, 100.0, 100.9, 102.9, 103.7, 107.7 and 112.0. See NEDB, *National Income of Thailand*, 1967 Edition, Bangkok, 1968, p. 148 and 1964 Edition, Bangkok, 1965, p. 148.

^{11/} The ratio for 1960 to 1964 is as follows: .675, .8133, .5118, .4600 and .615. See Thailand, Department of Labour, *Year Book of Labour Statistics 1965*, Bangkok, 1966, p. 47.

^{12/} Calculated from Bank of Thailand, *Monthly Report*, various issues.

private capital inflow, (16.6%), with that of total net investment (12.3%), one may conclude that there could be some excess capital in the economy. The lower growth rate of monthly excess reserves when compared to that of the total net investment is not a necessary indication of a shortage of capital, the lower growth rate of the former series can be covered by a much higher growth rate in foreign private capital inflow. Besides, the multiplier effect of the money creation of the excess reserves is completely disregarded here.

The analysis based on growth rates, certainly assumes that there is no excess capital in the initial period and that the absolute value of the total net investment is about the same as the excess reserves and net foreign capital inflows. This implicit assumption in the analysis, is clearly not realistic. In 1960, the initial period, the absolute value of the total net investment is about 14 times the net foreign capital inflow and more than 4 times the annual excess reserves. This analysis is justified only if one is willing to make a further assumption that the investment fund, which is not able to be examined here due to the lack of data, has an absolute value of three-fourths of the total net investment.

An alternative approach to the problem is to examine the changes in capital costs and wages. Unfortunately, data is not available for doing such an analysis. But with some reservations, wholesale prices and construction material indices may be used to indicate the movement of production costs. If there have been shortages of raw materials and some of the factors of production, one can expect that the wholesale prices and the prices of construction materials would rise rapidly. It is clearly evident from the official statistics that prices of construction materials, after having jumped in 1962, have been constant throughout the rest of the period.^{13/} The wholesale price index, however, increased substantially in the last part of 1960's with an average yearly increase of 10.3 as compared to the average increase of 3.5 for the entire period. Based on these facts, it is doubtful that Thailand had an excess capacity or under-employment in 1966 and 1967. But the same statement probably cannot apply to the period before 1966.

Now turning to the nature of the government fiscal or budgetary policy during 1960 and 1967. The inflationary aspect of the fiscal policy is relatively easy to establish. In the initial year of 1960, the government had a budget surplus of 58 million baht, the only budget surplus since 1957. The surplus turned into a deficit of 136 million baht in the following year. Since then the deficit has continued to grow until it has reached 630 million baht in 1964. With a drop in the deficit in 1965, an increase in the deficit occurred again in 1966 and finally reached the all-time high of 1,482 million baht in 1967.^{14/} The compound rate of growth of the budget deficit between 1961 and 1967 was 40.6%. This was much higher than the growth of the net national product, which was 7.3%, between 1960 and 1967. Therefore, the inflationary impact of the fiscal policy was certainly quite strong during the period in question.

^{13/} See Thailand, Office of the National Economic Development Board, *National Income of Thailand*, 1967 Edition, p. 148; and 1964 Edition, p. 148.

^{14/} Treasury calendar-year cash deficit in Bank of Thailand, *Annual Economic Report*, various years.

FACTORS AFFECTING CHANGES IN MONEY SUPPLY IN THAILAND 1964-1973

*Sataporn Jinachitra**

I. INTRODUCTION

Sources of change in money supply are traditionally described in the Bank of Thailand Monthly Bulletin by examining the consolidated balance sheet of the monetary system. The Thai monetary system consists of the Bank of Thailand, Commercial Banks and Government Savings Bank. When consolidated, the balance sheet of the monetary system shows the change in money supply due to changes in (1) foreign assets (2) claims on private sector (3) net claims on Central Government (4) net other items in the balance sheets. If the narrow money supply is used, the savings and time deposits (quasi-money) are deducted from the broad money.

In this paper the sources of change in money supply are looked at from the relation between the money and the monetary base. The method used in this study is adopted from the studies made by Joachim Ahrendorf and S. Kanesathasan [1]^{1/} and Rattan J. Bhatia [2]. Earlier attempts to apply this analysis to Thailand were made by Songkram Grachangnetara [3] and Niramol Charanyanond^{2/}. This study, though using the same approach, goes into more details by specifying the sources of monetary base more clearly^{3/}.

II. THE MODEL

The model explained below follows closely that used by Ahrendorf and Kanesathasan [1] and Bhatia [2]. The narrow definition of money (M_1) is used here mainly because it is used more often in Thailand than the broad definition of money. It is assumed that there is a relationship between money supply (M_1) and total monetary base (B). The relationship is assumed to be in the form of:

$$M_1 = kB \quad (1)$$

where k is the money multiplier^{4/}. And,

$$k = \frac{m}{(1-c)r+cm} \quad (2)$$

where c is the ratio of currency with the public to money supply, r is the ratio of total banks' cash reserves to banks' money (bank's deposits) and m is the ratio of demand deposits to banks' money. (See details in Appendix).

* The author wishes to thank Mr. Boonsong Soontornkungskul for his assistance in the calculations.

1/ Figures in brackets refer to reference given at end of this paper.

2/ The unpublished paper by Niramol Charanyanond (USOM, Bangkok) was made known to the author in 1972. In her study the money multiplier for Thailand is not derived and the separation of factors affecting money supply differs from what is done in this paper.

3/ In fact, the money multiplier derived by Grachangnetara has more details than what is used here. However, his monetary base was defined differently.

4/ The relationship may be in the form $M_1 = a + kB$.

A simple regression, however, shows that the constant term is not significantly different from zero.

$$\begin{array}{rcl} M_1 & = & 179.58 + 1.2988 B \\ \text{t-value} & = & .50 \quad 52.16 \\ R^2 & = & .9963 \quad (1963-73) \end{array}$$

The changes in money supply (ΔM_1) may be considered as the sum of changes in money supply due to changes in the monetary base (ΔM_B) and due to the fluctuations in the money multiplier (ΔM_k). Thus

$$\Delta M_1 = \Delta M_B + \Delta M_k \quad (3)$$

Differentiate (1) with respect to time

$$\frac{dM_1}{dt} = k \frac{dB}{dt} + B \frac{dk}{dt} \quad (4)$$

Or in discrete form, (4) may be written as

$$\Delta M_t = k_{t-1} \Delta B_t + B_t \Delta k_t \quad (4)'$$

Thus, ΔM_B in period t may be approximated by $k_{t-1} \Delta B_t$ and ΔM_k in period t by $B_t \Delta k_t$ ^{5/}.

By disaggregating the monetary base in (4)' according to their sources of base, ΔM_B may be further divided into changes owing to net foreign assets (ΔM_F), to net claims on central government (ΔM_G), to claims on banks (ΔM_{CB}) and to "net other items" of the monetary base (ΔM_O). Thus,

$$\Delta M_B = \Delta M_F + \Delta M_G + \Delta M_{CB} + \Delta M_O \quad (5)$$

Similarly, since k is determined by c , r and m ,

$$\Delta M_k = \Delta M_c + \Delta M_r + \Delta M_m \quad (6)$$

Each term in (6) may be approximated by disaggregating Δk into the changes attributable to changes in c , r and m , and then multiplied by B_t ($\Delta M_k = B_t \Delta k_t$). The change in k arising from changes in c , r and m may be roughly approximated by the formula^{6/}

$$\Delta k_t = -\frac{k^2}{m}(m-r) \Delta c_t - \frac{k^2}{m}(1-c) \Delta r_t + \frac{k}{m}(1-kc) \Delta m_t \quad (7)$$

III. STATISTICAL RESULTS

In the computation, the changes in money supply are shown in Table 1 as the sum of changes due to the change in monetary base, and the change in the multiplier (equation 3). Table 2 shows further break down of ΔM_k as in equation (6) and Table 3 shows the components of ΔM_B as in equation (5)

TABLE I

Changes in Money Supply Due to Changes in Monetary Base (ΔM_B) and in Money Multiplier (ΔM_k)

(Millions of Baht)

Year	ΔM_1	ΔM_B	ΔM_k	ΔM_B as % of ΔM_1	ΔM_k as % of ΔM_1
1964	736.3	754.3	— 18.0	102.4	— 2.4
1965	1,979.0	1,167.2	811.8	59.0	41.0
1966	1,739.7	1,897.8	— 158.1	109.1	— 9.1
1967	1,049.8	979.2	70.6	93.3	6.7
1968	1,579.1	1,467.2	111.9	92.9	7.1
1969	703.4	903.1	— 199.7	128.4	— 28.4
1970	1,458.7	1,539.3	— 80.6	105.5	— 5.5
1971	1,998.2	2,169.6	— 171.4	108.6	— 8.6
1972	3,385.2	4,000.9	— 615.7	118.2	— 18.2
1973	5,175.4	4,650.0	525.4	89.9	10.1

^{5/} Since $\Delta M_1 = k_{t-1} \Delta B_t + B_{t-1} \Delta k_t + \Delta B_t \Delta k_t$, equation (4)' may also be written as $\Delta M_t = k_t \Delta B_t + B_{t-1} \Delta k_t$. For this study, the approximation for ΔM_B and ΔM_k is made from (4)' i.e., the term $\Delta B_t \Delta k_t$ is included in ΔM_k .

^{6/} See appendix and reference [1].

It can be seen from Table 1 that changes in money supply in Thailand during the period 1964-1973 are largely attributable to changes in monetary base. Out of these ten years, the change in money supply due to the change in multiplier exceed 10 per cent of total change in the year 1965, 1969, 1972 and 1973 only. The variation in the multiplier has both positive and negative effect on the movement of money supply. From the result obtained in Table 1, the multiplier does not seem to follow any definite trend.

The influences of the ratios c , r and m on changes in money supply attributable to the change in the multiplier is shown in Table 2. Due to approximation into a discrete form, there are residual errors which are shown separately in Table 2. Despite the fact that ΔM_k is relatively small compared with ΔM_1 , the components of ΔM_k fluctuate rather widely. The movements in these components cannot be explained clearly. The part of ΔM_k due to variations in m shows a negative influence with an exception for the year 1965 only. This reflects the fact that quasi-money (savings plus time deposits) has been expanding at faster rates than demand deposits. In the year 1965, the narrow money (M_1) expanded at unusually high rate of 18.1 per cent while the broad money (M_2) expanded by only 14.4 per cent.

TABLE II

Changes in Money Supply Owing to Changes in Money Multiplier and Its Components.

(Millions of Baht)

Year	ΔM_k	ΔM_c	ΔM_r	ΔM_m	Residual error
1964	- 18.0	- 95.2	281.3	- 205.1	1.0
1965	811.8	375.9	202.0	234.3	- 0.4
1966	- 158.1	- 141.1	303.2	- 320.9	0.7
1967	70.6	197.2	30.9	- 158.5	1.0
1968	111.9	152.8	57.2	- 98.1	0.0
1969	- 199.7	108.5	- 26.7	- 278.3	- 3.2
1970	- 80.6	- 21.2	172.7	- 230.7	- 1.4
1971	- 171.4	22.9	88.2	- 288.8	6.3
1972	- 615.7	- 127.4	51.6	- 535.0	- 4.9
1973	525.4	- 134.6	884.0	- 228.5	4.5

For ΔM_r , that part of ΔM_k attributable to changes in the reserve ratio, the sign is always positive, except for the year 1969. On May 9, 1969, cash reserve requirement for commercial banks was raised from 6 per cent to 7 per cent, of which a half may be held in the form of unobligated Government securities. The increase in reserve ratio caused a reduction in k and a negative ΔM_r in 1969. For other years the positive sign of ΔM_r probably reflects the declining excess reserve of commercial banks in relation to their total depositors. The movement of ΔM_c , however, does not show any definite pattern.

The variations in c , r and m may be regarded as partly behavioural and partly policy induced. While the legal reserve ratio may be altered by the monetary authority, the excess reserve ratio may vary independently. The variations in the currency ratio (c) and the demand deposits to total deposits ratio (m) may be largely behavioural. However, the ratios c and m may also respond to certain policy measures. The higher rate of interest may induce the public to hold less cash and shift their financial assets from demand deposits into time deposits.

Next let us look at ΔM_B , the changes in money supply caused by changes in monetary base. As shown in Table 3 changes in money supply caused by changes in monetary base are dominated by ΔM_F and ΔM_G . During 1964–1971, ΔM_F and ΔM_G moved in opposite directions. In 1972, when money supply expanded by 15.8 per cent, both the net foreign assets and net claims on Government of the Bank of Thailand contributed to the growth in money supply. Bank of Thailand's claims on banks played very small part in the expansion of monetary base until 1970. The larger ΔM_{CB} in 1970 and 1971 were the result of expanding rediscounting facilities at the Bank of Thailand. In 1972 when commercial banks were highly liquid, ΔM_{CB} was very small. But in 1973 when bank credit expanded at a very high rate, commercial banks' borrowing from Bank of Thailand increased substantially and for the first time became a major source of the increase in money supply. Little can be said about ΔM_O . "Net other items" in monetary base consists mainly of the capital account of the central bank, the movement of which depends on the net profit. ΔM_O may therefore be treated as an exogenous factor which cannot be controlled.

TABLE III

Changes in Money Supply Owing to Changes in Monetary Base and Its Components

(Millions of Baht)

Year	ΔM_B	ΔM_F	ΔM_G	ΔM_{CB}	ΔM_O
1964	754.3	1,631.0	– 1,050.1	126.2	47.2
1965	1,167.2	1,953.5	– 503.6	90.2	– 372.9
1966	1,897.8	5,038.5	– 2,714.1	82.5	– 509.1
1967	979.2	2,479.7	– 724.1	– 124.3	– 621.1
1968	1,467.2	– 5.9	2,288.1	75.5	– 890.5
1969	903.1	– 1,190.5	3,324.2	– 160.4	– 1,070.2
1970	1,539.3	– 2,243.0	5,046.6	663.5	– 1,927.8
1971	2,169.6	– 1,484.6	4,264.5	640.0	– 1,250.3
1972	4,000.9	4,258.4	1,246.0	– 26.9	– 1,476.6
1973	4,650.0	4,585.9	100.1	2,089.6	– 2,125.6

IV. IMPLICATIONS FOR THE CONTROL OF MONEY SUPPLY

The analysis of changes in money supply in relation to changes in monetary base does not receive much attention in Thailand. The result in Table 1 suggests that the money supply may be controlled if monetary base can be controlled. And if the volume of money is to be influenced by the supply side, monetary base should be the most important target to be controlled. In Grachangnetara's paper, attention was drawn to the movement in monetary base for the period 1969–70. The concerns were then mainly centred around the fear of shortage of monetary base due to the deficits in the balance of payments, and banks credit may not be expanded sufficiently to satisfy the demand. The argument can be applied in the opposite case. In 1973, when credit and money grew at exceptionally high rates (43% and 20.8% respectively) the monetary base was allowed to expand to accommodate the demand.

The analysis of sources of changes in money supply in terms of monetary base also has advantage over the analysis using the consolidated balance sheet of the monetary system. It shows out more clearly what kind of policy should be use to control monetary base when there is a need to limit money supply expansion. The consolidated

balance sheet only shows the overall view of the credit expansion and movements of other aggregate items. It fails to show the movement due to the central bank's action separately from those due to commercial banks behaviour. The year 1973 is an interesting example. A look at Table 3 will tell that the monetary base expansion in 1973 came mainly from the increase in foreign assets of the central bank. The consolidated balance sheet in 1973, however, shows a smaller increase in foreign assets of the monetary system in comparison to 1972. This means that, while the net increase in international reserves of the country was not too large in 1973, foreign assets of the central bank increased by a much larger amount. In the last quarter of 1973 commercial banks borrowed a large amount from abroad and sold the foreign exchange to the Bank of Thailand in exchange for local currency. Thus, the monetary base was expanded which enabled banks to expand credit and money substantially.

If money supply still remains an important policy target of the monetary authority, the analysis in terms of monetary base and money multiplier should serve useful purpose in controlling the supply side. The consolidated balance sheet may be employed for planning and fixing targets of some monetary aggregates but the balance sheet by itself does not tell how the targets can be reached. The control on monetary base (and perhaps the multiplier) may help to ensure that policy targets will be achieved.

References

- [1] Joachim Ahrendorf and S. Kanesathasan, "Variations in the Money Multiplier and Their Implications for Central Banking," *IMF Staff Papers*, Vol. VIII (1960), pp. 126-149.
- [2] Rattan J. Bhatia, "Factors Influencing Money Supply in BCEAO Countries," *IMF Staff Papers*, Vol. XVIII (1971), pp. 389-398.
- [3] Songkram Grachangnetara, "An Analysis of the Money Multiplier and Money Supply Changes in Thailand," *Economic Journal* (Thammasat Economic Association) (1972), pp. 122-137.
- [4] Albert E. Burger, *The Money Supply Process*, California, Wadsworth Publishing Company, Inc. (1971).

APPENDIX

I. SOURCES AND USES OF MONETARY BASE

The monetary base may be viewed either from the sources of base or the uses of base. In the separation of changes in money supply due to changes in monetary base (ΔM_B) into ΔM_F , ΔM_G , ΔM_{CB} and ΔM_O , the total monetary base was broken down according to sources of base. The sources of base indicate the asset supplied by the Bank of Thailand (BoT) and the Treasury to the economic units in the economy. The uses of base, on the other hand, reflects banks' demand for reserves (required legal reserves, excess reserves and cash on hand), and the public's demand for currency. Sources of base are obtained from Bank of Thailand's balance sheet and the value of Treasury coins in circulation. (For discussion on sources and uses of base money, see, for example, Albert E. Burger [4]).

$$\begin{aligned}
 \text{Sources of base} &= \text{Foreign assets of BoT} \\
 &+ \text{Net IMF position} \\
 &+ \text{BoT's claims on central government} \\
 &+ \text{Treasury coins in circulation} \\
 &- \text{Currency held by government} \\
 &- \text{Government deposits at BoT} \\
 &+ \text{BoT's claims on commercial banks} \\
 &- \text{BoT's capital accounts} \\
 &- \text{Private sector's deposits at BoT} \\
 &- (\text{BoT's other liabilities} - \text{BoT's other assets}) \\
 &= \text{Net foreign assets of BoT} \\
 &+ (\text{BoT's net claims on Government} + \text{Treasury coins in} \\
 &\quad \text{circulation}) \\
 &+ \text{BoT's claims on commercial banks} \\
 &- \text{Net other items.}
 \end{aligned}$$

$$\text{Or} \quad B = F + G + CB - O$$

$$\begin{aligned}
 \text{Uses of Base} &= \text{Currency held by public} \\
 &+ \text{Currency held by banks} \\
 &+ \text{Banks' deposits at BoT.}
 \end{aligned}$$

II. THE MONEY MULTIPLIER

The average multiplier is used in this paper. The multiplier is therefore expressed in terms of the average ratios of currency to money (c), of reserves to banks' deposits (r), and of demand deposits to total banks' deposits (m). Demand deposits and total banks deposits used here include only those regarded as banks' money. The multiplier used in this paper is,

$$k = \frac{m}{(1-c)r + cm} \quad (2.1)$$

$$= \frac{\frac{DD}{D}}{(1 - \frac{C}{M_1}) \cdot \frac{R}{D} + \frac{C}{M_1} \cdot \frac{DD}{D}} \quad (2.2)$$

where M_1 = money (narrow definition)
 C = currency held by public
 DD = demand deposits = $M_1 - C$
 D = total banks deposits = $DD + \text{Quasi-money}$
 R = Banks' reserves
 = cash in hand + banks' deposits at BoT

If both numerator and denominator of (2.2) are multiplied by D/DD , we obtain

$$k = \frac{1}{(1 - \frac{C}{M_1}) \cdot \frac{R}{DD} + \frac{C}{M_1}} = \frac{1}{\frac{M_1 - C}{M_1} \cdot \frac{R}{DD} + \frac{C}{M_1}}$$

$$= \frac{1}{\frac{R}{M_1} + \frac{C}{M_1}} = \frac{M_1}{R + C} \quad (2.3)$$

Since $(R + C)$ is the monetary base, therefore

$$k = \frac{M_1}{B} \quad (2.4)$$

The change in k arising from changes in c , r , and m is obtained by differentiating (2.1) with respect to time. Thus,

$$\frac{dk}{dt} = \frac{\partial k}{\partial c} \cdot \frac{dc}{dt} + \frac{\partial k}{\partial r} \cdot \frac{dr}{dt} + \frac{\partial k}{\partial m} \cdot \frac{dm}{dt} \quad (2.5)$$

$$= -\frac{k^2}{m}(m - r)\frac{dc}{dt} - \frac{k^2}{m}(1 - c)\frac{dr}{dt} + \frac{k}{m}(1 - kc)\frac{dm}{dt} \quad (2.6)$$

This derivative is approximated in a discrete form as

$$\Delta k_t = -\frac{k^2}{m}(m - r)\Delta c_t - \frac{k^2}{m}(1 - c)\Delta r_t + \frac{k}{m}(1 - kc)\Delta m_t \quad (2.7)$$

To improve the approximation, the coefficients of Δc_t , Δr_t and Δm_t are evaluated by using the average values of k , c , r and m in period t and $t-1$. The components of ΔM_k , i.e. ΔM_c , ΔM_r and ΔM_m can then be obtained by multiplying each product on the right hand side of equation (2.7) by the monetary base in period t . Due to approximation the three components do not always add up to the total and residuals are shown separately in Table 2.

INFLATION: THE CASE OF EXTERNAL DISTURBANCES*

Supachai Panitchpakdi

"...For I am quite convinced of this: that whereas it is quite possible to live with small inflations for quite a long time, all experience shows that, in the long run, inflations of a greater order of magnitude are not only incompatible with orderly economic arrangements but also are incompatible with political democracy and the decency and the culture which go with it..."

Lord Robbins

SOME BACKGROUNDS OF INFLATION IN THAILAND

Up till the year of 1972 the Thai economy was considered a showcase of a developing economy that managed to have sustained growth while retaining a satisfactory degree of stability. According to Paul B. Trescott, "...Price stability in Thailand requires a considerable degree of luck, in the sense that world markets determine the prices for important export products, such as rice, and the prices of important imports, such as motor vehicles and fuel, machinery, and consumer durable goods. When world prices have risen sharply as in 1950-52 and 1965-69, Thailand has experienced inflation also. But Thailand has succeeded to a high degree in avoiding internally generated inflationary pressures, particularly since 1955. Considering the relative constancy of money velocity, price stability must reflect a close balance between the growth of money and the growth of output..."^{1/}. It has been found that stability has partly resulted from the structure of the monetary system itself, as well as from an absence of more violent disturbances and the restraint in the rise of government expenditures^{2/}. Starting in 1972, the price level climbed at a noticeably faster rate. The rate of increase of the GDP deflator in 1972 was 7.3 per cent as opposed to only 1.1 per cent in 1971. One of the main reasons behind this inflationary trend was the widespread crop damage brought about by extensive drought and floods. The upward pressure on the price trend thus originated from the domestic shortage of rice and other crops (and certainly not from the increased earnings of the farmers as sometimes alleged). Moreover 1972 also witnessed a worldwide shortage of food products due to bad weather conditions the world over. This pushed up the world prices of rice, maize and other farm products which stimulated increasing exports from Thailand. This in turn aggravated the domestic shortage still further (see Table 1 below).

* The author is grateful to Dr. Olarn Chaipravat, Dr. Chaiyawat Wibulswasdi, and Mr. Sataporn Jinachitra for their instructive comments on the earlier drafts of this paper. He would also like to thank Mr. Suthep Pongkiatkul for the calculating work he has done for this paper. The remaining shortcomings in this paper are, however, to be blamed on the author alone.

^{1/} Paul B. Trescott, *Thailand's Monetary Experience: The Economics of Stability*, New York, Praeger Publishers, 1971.

^{2/} Trescott, *ibid.*, chapter 8.

TABLE I
Rice and Maize Production and Export

(Million Metric Tons)

Year	Rice		Maize	
	Production	Export	Production	Export
1968	10.8	1.1	1.5	1.5
1969	13.3	1.0	1.7	1.6
1970	13.4	1.1	2.0	1.4
1971	14.2	1.6	2.3	1.8
1972	12.0	2.1	1.3	1.8
1973	13.7	0.8	2.3	1.4

Source: Department of Agricultural Economics.

To make matters even worse, shrewd businessmen began to accumulate large stocks of consumer products ultimately resulting in rather extensive hoarding with all its derogatory consequences.

The rise in the GDP deflator accelerated in 1973 with the rate of increase of 16.0 per cent (see Table 2) while the rate for CPI was 15.6 per cent. All price indices demonstrated a substantial increase in this year with the WPI of the imported products rising 21.0 per cent and the WPI of the exported products rising 38.7 per cent which was the highest of all price increases. If we look at the WPI over the period of 1968–1971 we shall notice that while the price level of imported and exported products have been going up (from 100.0 to 113.4 and from 100.0 to 103.9 respectively) the price level of the domestic products remained more or less stable or tended to fall (from 100.0 to 98.4). These price increases therefore seemed to have preceded the price increase of the domestic products in 1972. Analogous inflationary pressure persisted more forcefully in 1973 with the world food shortage becoming more serious, aggravated by the upsurge

TABLE II

Wholesale Price Index (1968=100) and Consumer Price Index (Oct. 1964–Sept. 1965=100) for Thailand

Period	WPI All Items	WPI Domestic and imported products		WPI Special index for exported products	CPI All Items	GDP deflator
		Domestic Products	Imported Products			
Weights	100.00	69.23	30.71	—	100.00	—
1968	100.00	100.0	100.0	100.0	110.9	112.0
1969	103.3	103.3	103.3	112.5	113.6	114.2
1970	102.8	99.3	110.8	107.8	113.5	112.6
1971	103.1	98.4	113.4	103.9	114.0	113.8
1972	111.2	107.8	118.9	111.7	119.5	122.1
1973	136.6	133.6	143.9	154.9	138.1	141.6
1974						
January	163.1	158.1	175.5	191.1	156.1	
February	165.3	162.7	171.7	189.1	160.4	
March	173.7	173.9	174.0	208.4	166.5	

Source: Department of Business Economics, Ministry of Commerce.

of the price of primary products and oil in particular. Inflation that threatened to spread to all corners of the world did just that in 1973. The increases in the price of imports and exports have certainly played an important role in driving up the domestic prices. Through the shortages in the supply of items as petro-chemical fertilisers, steel, paper etc. that had to be imported, the domestic prices of goods which had these items as input are further propelled upwards. The proclamation of a large-scale oil embargo at the end of 1973 and the price hikes of oil at the beginning of 1974 took care that the inflationary trend continues more vehemently in 1974 as can be observed for the first three months from Table 2. From a report by the International Monetary Fund^{3/} it was concluded that: "...Fragmentary data now available for 1973 on consumer prices and GNP deflators suggest that an accelerated rate of overall inflation in 1973 was a world-wide phenomenon, affecting the primary producing countries as much as—if not more than—the industrial countries. *Contributory to this rise in inflation, with particular reference to the primary producing countries, were a number of influences flowing from the foreign sector*: the dramatic increases in exported goods that, from 1972 to 1973, was two to three times the rate of increase from 1971 to 1972, and the relative depreciation of most of their currencies since 1971..." This description of the main sources of inflation fits remarkably well with the economic scene in Thailand, especially with the emphasis on the foreign or international sector. Acknowledging the fact that other factors as crop failure, price expectation and hoarding, depreciation all have a hand in driving up prices in Thailand, the main sources must be sought in the sectors of import, export plus those borderline sectors of importable and exportable goods produced and consumed domestically. The WPI of the imported products rose 21.0 per cent in 1973 and continued to rise in the beginning of 1974. Thailand, being a developing country, can hardly avoid importing a large bulk of capital goods, raw materials etc. necessary for domestic production and not produceable domestically. The higher costs of production due to rising import prices are thus inevitable. Goods that can be produced domestically to substitute import generally require a large portion of imported inputs and their prices also consequently rise. On the export side, the high world prices of a number of Thai exports have brought about an excessive outflow of these products which eventually causes a shortage at home. This results in the increase in the prices of these products that are consumed within the country. The official export premium policy, for example, is designed to keep domestic price of rice at a reasonable level. Apart from this, the increased incomes of the exporters have also led to the increase in the effective demand that provided extra fuel to the inflation fire. All in all the so-called international sector deserves to be watched in connection with the contemporary inflation in Thailand. In this paper, we attempt to determine the important link between the price level of the international sector and that of the national or domestic sector within the general equilibrium framework of the national economy. After setting out the theoretical backgrounds, the two-sector model will be estimated empirically. Some simulating exercises with the effects of the rise and fall of the international price on the national price will provide us with some fresh insight into the likely impact so that measures designed to curb inflation could benefit by taking due account of the relationships found in our exercises. Although we shall refrain from suggesting any outright measures to curb inflation since they normally involve intricate economic, social and political objective functions whose scope lies beyond our exercises, we shall nevertheless venture to indicate the points the measures have to touch to be effective at all.

^{3/} IMF, *World Economic Outlook-Background Information*, 1973.

THEORETICAL CONCEPTS OF A MODEL WITH NATIONAL AND INTERNATIONAL SECTORS

In deliberating on the policies and instruments to fight inflation, it should be most rewarding to commence by considering the possible sources of the inflationary pressure. In an ordinary open economy three sectors from where inflation can originate, should be considered, namely, the import, domestic, and export sectors. Policies having the range limited more or less to the domestic sector cannot claim to be really effective if the inflationary pressure resides in other sectors as well. Knowing fairly surely the whereabouts of the main pressure gives us all the more reason to take a closer look into the policies that are geared to that particular sector. As already mentioned above, in the recent past the important sources of inflation in the Thai economy seemed to be located in the export and import sectors, themselves receiving the initial impact from the rest of the world, i.e. Thailand's trading partners in particular. Seen in this manner, these two sectors are therefore entitled to growing interest, particularly regarding the search for the most appropriate measures to counter inflation that should produce the largest impact in these sectors.

In order to be able to consider inflation in the above manner, we should adopt a model that deals with the price effects within and between the three sectors. However, to make matters more tractable and because commodities traded in both import and export sectors are of the tradable type, we shall view the sectors from the point of view of tradable and non-tradable goods. This is a simplifying concept widely used in the theory of international trade. It assumes that all commodities can be simply classified into those that could enter into foreign trade and those that do not because transportation is not feasible for them^{4/}.

The tradables include the following items:

1. exportables which are produced domestically and actually partly exported,
2. importables which are produced partly domestically and post by imported

We shall refer to tradables as goods traded within the international sector. Seen from the demand side, international goods include a) importables and b) locally consumed exportables; whereas on the supply side international goods include a) exportables and b) locally produced importables. The nontradables or national goods are commodities that have to be produced and consumed within the borders of a country and do not enter into international trade. They belong in the national sector and include items such as housing, defense, construction, services, public utilities etc..

Since some intersectoral relationships (and substitution) between the national and international good exists, a change in the price level of the international goods is bound to induce corresponding change in the price level of the national goods and thus in the general price level ^{5/} of the whole economy. Only in case the supply of national goods is completely elastic that there can be no rise in the price of the national goods. But normally this elasticity is on the low side and the less elastic the supply of national goods is the greater will be the effect of the change in the international price on the domestic price level. Therefore to help work out the above concepts in a more concrete fashion, we need a model that takes into account the demand and supply sides of both

^{4/} See, R.I. Mckinnon, "Optimum Currency Areas," *American Economic Review*, Vol. VIII, September 1963, No. 4, pp. 717-725.

^{5/} The general price level is the weighted average of prices from the national and international sectors.

sectors. There will have to be two separate sets of prices, one for each sector. Although theoretically the definitions of these prices are self-evident, in practice, their measurements can create some problems to which we shall come back later on in the paper. The simple model^{6/} we should like to propose looks as follows:

$$\Delta Q_{nd} = b_n(\Delta P_n - \Delta P_i) + c_n \Delta Y \quad (1)$$

$$\Delta Q_{ns} = e_n \Delta P_n \quad (2)$$

$$\Delta Q_{ns} = \Delta Q_{nd} \quad (3)$$

$$\Delta Q_{id} = b_i(\Delta P_i - \Delta P_n) + c_i \Delta Y \quad (4)$$

$$\Delta Q_{is} = e_i \Delta P_i \quad (5)$$

$$\Delta Y = \Delta Q_{ns} + \Delta Q_{is} \quad (6)$$

where Q_{nd} denotes demand for goods from national sector
 Q_{ns} supply of good from national sector
 Q_{id} demand for goods from international sector
 Q_{is} supply of goods from international sector
 P_n price level of national goods
 P_i price level of international goods
 Y real total output of the economy

endogenous variables : Q_{nd} , Q_{ns} , Q_{id} , Q_{is} , Y , P_n

exogenous variable : P_i

The demand for goods from the national sector is assumed to be dependent on the level of real output of the economy and on the relative price of the national and international goods. In equation (1) the initial prices are assumed to be unity and the difference of the change in both prices therefore represents the relative change. The sign of the coefficients b_n and b_i is obviously negative. The supply of national goods is a positive function of their price (eq. 2). The assumption of equilibrium in the national sector is set out in eq. (3). It should be noted that we do not assume equilibrium in the international market, thus implicitly implying certain balance of trade surplus or deficit. The difference between Q_{id} and Q_{is} is the trade balance since their components of a) locally consumed exportables and b) locally produced importables cancel each other out leaving only actual import and export. The assumption of non-equilibrium is reasonable since the national and international markets are separated from one another. Equilibrium in one market does not necessarily imply equilibrium in the other. The equations for the international sector are based on similar concept as the first two equations. In eq. (6) the total output of the economy is defined as the sum of the supply of the national and international commodities. We assume one exogenous *cum* instrument variable in the model, P_i , the movement of which can be affected by situations in the world market and other factors outside the model such as the government's policy concerning international trade.

Before proceeding to the exercise with this theoretical model, a few words to clarify the role of real output which is more than apparent in the model are in order here. It is a normal practice to include income in the demand equation to portray the income effect on demand. In our model the concept behind the application of real income in both demand function can be said to be couched upon the concept of the income-absorption

^{6/} This is similar to the Harberger-type model applied in Latin America. See, Werner Baer and Isaac Kerstenetsky (eds.), *Inflation and Growth in Latin America*, New Haven, Yale University Press, 1964, pp. 319-51.

approach in the analysis of the effects of devaluation^{7/}. This is an alternative to, and to some an improvement on, the widely known elasticities approach. The basic concept of the absorption approach is that if a devaluation is to affect the foreign balance, it can do so in only two ways: (1) it can lead to a change in the production of goods and services in the country; (2) the devaluation may change the amount of real absorption—defined as the total goods and services taken off the market domestically or as the total real domestic expenditure ($Q_{nd} + Q_{id}$ in our case)—associated with any given level of real income^{8/}. The absorption of goods and services—according to the framework of this approach—depends partly on real income, which itself is equal to the output of goods and services ($Q_{ns} + Q_{is}$ in our case); and partly on the price level, or other factors related to the devaluation^{9/}. Although we need not go into the basic problems dealt with in this approach—such as how does devaluation affect income, how does a change in the level of income affect absorption, how does devaluation directly affect absorption at any given level of income, etc.—it is clear that the basic assumptions comply with those of our model. The real income factor is present in both demand functions which represent the components of the absorption. The main difference resides in the fact that our framework allows two sets of price which characterise the model whereas the absorption approach admits only one set.

From the above model the following relationship between the price level of the national and international sectors can be derived:

$$\Delta P_n = \frac{(c_n e_i - b_n)}{e_n(1-c_n) - b_n} \Delta P_i \quad (7)$$

Considering that b_n is negative and c_n , being the marginal propensity to consume national goods which is normally less than one, the above solution portrays a positive relationship between P_n and P_i . It is interesting to note that in case the supply of national goods is completely elastic — e_n is infinite—there will be no change in P_n even when P_i changes. Another extreme case, when the supply of both national and international goods is completely elastic, implying that $e_n = e_i = \infty$, which means that $\Delta P_n = \Delta P_i$. Another obvious case in which $\Delta P_n = \Delta P_i$ is when $c_n c_i = e_n(1-c_n)$.

In the subsequent exercises the above relationships will be empirically estimated after due adaptations and modifications have been made. Eq. (7) will be identified and directly used to estimate the effect of a change in the international price on the national price. But, as a conceptual exercise, and in case we have an idea about the magnitude of some strategic elasticities and share of the demand and supply of international goods in the total output of the economy, we can roughly estimate the relationship between ΔP_n and ΔP_i . This should be an instructive exercise that would not go futile as it can be used as some sort of a consistency check on the empirical results to be obtained subsequently. For this purpose, the following transformation of eq. (7) into elasticity form is needed:

Let β_n be the price elasticity of demand for national goods
 σ_n be the income elasticity of demand for national goods
 α_n be the price elasticity of supply of national goods
 α_i be the price elasticity of supply of international goods

^{7/} This is first introduced in Sidney S. Alexander, "Effects of a Devaluation on a Trade Balance," *International Monetary Fund Staff Papers*, Vol. II, No. 2, April 1952, pp. 263–278.

^{8/} S. Alexander, *ibid.*, p. 265

^{9/} S. Alexander, *ibid.*, p. 266

σ_i be the income elasticity of demand for international goods
 c_s be the marginal propensity to hoard, i.e. marginal propensity to save minus marginal propensity to invest ($c_n + c_i + c_s = 1$)

We therefore have:

$$e_i = \alpha_i Q_{is} \quad \text{and} \quad e_n = Q_{ns} \alpha_n \quad (8)$$

$$b_n = \beta_n Q_{nd} \quad (9)$$

$$\text{and} \quad C_n = \frac{\sigma_n Q_{nd}}{Y} \quad \text{and} \quad C_i = \frac{\sigma_i Q_{id}}{Y} \quad (10)$$

By substituting these identities, eq. (7) can be turned into:

$$P_n = \frac{Q_{nd} \sigma_n Q_{is} \alpha_i - \beta_n Q_{nd}}{Y} \frac{\Delta P_i}{\alpha_n Q_{ns} \left(\frac{\sigma_i Q_{id}}{Y} + c_s \right) - \beta_n Q_{nd}}$$

or, knowing that $Q_{nd} = Q_{ns}$

$$\Delta P_n = \frac{Q_{is} \sigma_n \alpha_i - \beta_n}{Y} \frac{\Delta P_i}{\alpha_n \left(\frac{\sigma_i Q_{id}}{Y} + c_s \right) \beta_n} \quad (11)$$

which can be further simplified if we assume that no hoarding takes place ($c_s = 0$). A series of value of these parameters can be substituted in eq. (11) to determine the empirical relationship. An example is given here:

if $\frac{Q_{is}}{Y} = 0.45$, $\frac{Q_{id}}{Y} = 0.50^{10/}$, $\sigma_n = 1.0$, $\sigma_i = 1.5$

$$\beta_n = -0.3, \alpha_n = 1.0, \alpha_i = 0.5, \text{ and } c_s = 0.1 \text{ then, } \Delta P_n = 0.46 \Delta P_i \quad (12)$$

Obviously a series of simulation exercises can be carried out to see whether the relationship is sensitive to any particular parameters. Assuming that the discrepancies are small which is not very unrealistic, the derived coefficient should not undergo any radical change. From eq. (12) it can be observed that a rise or fall of about 10 per cent in the price level of the international goods will induce a 4.6 per cent rise or fall respectively in the price level of national goods. The ultimate change each way in the general price level will therefore be about 7.0 per cent.

The above formula can still furnish us with some extra information. It can be observed that the higher the share of the supply of international goods and the lower the share of the demand for international goods in the total output, the greater will be the impact of the change in the price level of the international goods on the price level of the national goods. At a first glance it seems surprising that the size of the impact should be proportionally related to the size of the share of the supply of and inversely related to the share of the demand for international goods in the total output. But if we think in terms of the assumptions explicit in the model, i.e. for this case that the supply of international goods which includes exportables and locally produced importables, represents the size of the international sector (and used in weighting the international price in calculating the general price index) then the interpretation of the above result becomes more digestible. It seems to be logical that the greater the size of the international sector the larger will be the impact of the international price on the national price.

^{10/} The reason that both shares are so large is because the exportables consumed domestically and importables produced domestically are also included.

Although it is rather risky to fully generalise the assumption involved here, the case of Thailand is incidentally most compatible with it. As already noted in the beginning, apart from the reason of worldwide food shortage, inflation infiltrated into Thailand in 1972 through the export sector that sent an unprecedented amount of rice abroad that year.

Furthermore, still considering eq. (11), if the propensity to hoard should rise—hoarding defined as the excess of savings over investment—the impact of the change in international price will be reduced. Hoarding is probably an unfortunate choice of term here since it might conjure the image of excessive holding of inventions in the expectation of higher price the act of which drives up the price level still further. Hoarding in the sense used in the present framework implies that the demand for imported capital goods needed in the domestic investment will slow down and therefore mitigate the effect of the international price.

Concerning price elasticities, the higher the price elasticity of the supply of international goods and the lower the price elasticity of the supply of national goods, the greater will be the impact. This is, however, seldom realised since the former elasticity tends to be small (with agriculture forming the bulk of the sector) compared with the latter, as testified by the rapid expansion of the service sector in Thailand.

EMPIRICAL ESTIMATIONS OF THE MODEL

In order to fit the Thai economy in this model and make things look palatable, some adaptations and modifications of the original model are called for. The following issues are taken into consideration when applying the Thai data to estimate the model:

1. The influence of the total nominal income on the demand in both sectors should be considered instead of the impact of real income as formerly proposed. This implies that we shall have to deviate somewhat from the basic principle of the absorption approach. This modification does not necessarily dilute the basic framework of the model since the main concept still remains intact. The major reason behind this modification stems from the fact that the income effect on demand operates not so much through an increase in the volume of real output as through a hike in the output's price level in the case of Thailand. This effect is strongly reflected in the increased earnings of the exporters and producers of primary products which in the last few years have been the result of a steep rise in the world price of primary products. Compared with the corresponding rise in the volume of production, the price rise has been rather dominating in the change in the purchasing power of the suppliers of exportables.

2. In the supply functions of both sectors factor wage should be included to account for part of the production costs. Actually the appropriate wage level of each sector should be used. But in view of the lack of reliable data on wage level in different sectors, we have to make use of a more general index which is the minimum wage offered by employers to the unskilled labourers. The expected influence of this factor on the supply should have a negative sign although this could be unclear particularly in the international sector where these are quite a number of self-employed persons.

3. For the supply function of international commodities several specifications should be tried out since it is known that non-market factors can play significant role in determining the supply. These factors include lagged price factor (assuming farmers' lagged response to price change), the weather condition, the damaged area, and the time trend.

The following division of sector is pursued here :

- a) international sector is composed of the following sub-sectors:
 - agriculture
 - mining
 - manufacturing
- b) national sector is composed of the following sub-sectors :
 - construction
 - electricity
 - commerce
 - transportation
 - services
 - other activities^{11/}

Although the products of some sub-sectors cannot be said to have purely national or international characteristics we let the degree of preponderance of certain products be the decisive factor in allocating the sub-sectors. The sub-sector "services" seems to be more ambiguous than others in that quite a considerable amount of "services" from Thailand has been sold abroad. Admittedly such a circumstance did not come about normally or was due to some economic motivations but was rather autonomous and caused by abnormal demand due to military engagements for a period of time. But since the magnitude is substantial we thought it worth while to experiment by splitting up the sub-sector services into two parts each belonging in the international and national sectors. The results are presented and discussed as case III below.

We have other two versions of the estimated model because there can be two possible series of price indices for both national and international products. The first instance is the simplest type of price indices that can be directly calculated from the national accounts in current and constant price. This series of price indices which can be determined as the quotient of nominal and real output is used to estimate the model in case II.

In case I we have chosen to use another set of price indices deemed the most logical and suitable to the proposed framework. Although the set is a contrived one, it reflects the nature of our international sector. To construct this set we start by first determining the appropriate price index for international goods. Since these goods include both exportables and importables, it seems to be more sensible to use as their price index the weighted average of the unit values of export and import instead of simply using the domestic price directly calculated from the national account. Knowing the total nominal income, real output in both sectors, and the price index for the international sector, we can now proceed to construct a price index for national goods that balances the equation (total nominal income is equal to the sum of the nominal output in the national and international sectors). Although being calculated in this case as a residual, this price index for the national goods is quite credible. Taking the above direct estimate (case II) of the price index of the national goods as a reliable standard, it was found that there is a significant correlation between the direct estimate and the residual estimate (case I) with $R^2=0.82$. In the estimation of the model all price indices used have 1962 as the base year and the time series runs from 1960 up till 1973.

^{11/} The size of the supply of national and international goods can therefore be derived according to the above classification from the gross domestic product. The supply of international goods include export, import substitution, and export-type goods consumed at home. The demand for international goods can therefore be determined by adding the difference between import and export to the supply.

The three versions of the estimated model are presented below:

CASE I

$$Q_{nd} = 7,911.06 + 0.37 Y \quad R^2 = 0.96 \quad (13)$$

(3.48) (18.69) DW = 1.10

$$Q_{ns} = -53,409.91 + 860.07 P_n \quad R^2 = 0.84 \quad (14)$$

(-4.42) (8.44) DW = 0.81

$$Q_{nd} = Q_{ns}$$

$$Q_{id} = 38,185.94 - 240.48 (P_i/P_n) + 0.35 Y \quad R^2 = 0.97 \quad (16)$$

(4.43) (-3.21) (13.63) DW = 1.19

$$Q_{is} = 24,648.40 + 3,014.71 t \quad R^2 = 0.99 \quad (17)$$

(29.56) (30.79) DW = 1.40

$$Y = P_i Q_{is} + P_n Q_{ns} \quad (18)$$

CASE II

$$Q_{nd} = 7,911.06 + 0.37 Y \quad R^2 = 0.96 \quad (19)$$

(3.48) (18.69) DW = 1.10

$$Q_{ns} = -114,894.57 + 1,463.91 P_n \quad R^2 = 0.85 \quad (20)$$

(-6.13) (8.70) DW = 1.68

$$Q_{nd} = Q_{ns} \quad (21)$$

$$Q_{id} = 58,007.61 + 490.55 (P_i/P_n) + 0.42 Y \quad R^2 = 0.95 \quad (22)$$

(2.85) (-2.30) (16.23) DW = 0.83

$$Q_{is} = 24,648.40 + 3,014.71 t \quad R^2 = 0.99 \quad (23)$$

(29.56) (30.79) DW = 1.40

$$Y = P_i Q_{is} + P_n Q_{ns} \quad (24)$$

CASE III

$$Q_{nd} = 9,710.40 + 0.30 Y \quad R^2 = 0.98 \quad (25)$$

(7.34) (26.51) DW = 1.26

$$Q_{ns} = -90,653.44 + 1,186.90 P_n \quad R^2 = 0.93 \quad (26)$$

(-8.63) (12.72) DW = 2.12

$$Q_{nd} = Q_{ns} \quad (27)$$

$$Q_{id} = 62,318.50 - 541.72 (P_i/P_n) + 0.44 Y \quad R^2 = 0.89 \quad (28)$$

(2.01) (-1.69) (10.63) DW = 0.99

$$Q_{is} = 24,268.00 + 3,747.64 t \quad R^2 = 0.98 \quad (29)$$

(21.19) (27.88) DW = 0.83

$$Y = P_i Q_{is} + P_n Q_{ns}$$

As can be observed from the last equations of each case, Y is now redefined as the total nominal income instead of the total real income as referred to in the theoretical model. The factor t represents the time trend which has been found to provide consistently the largest explanation of the supply of international products. All these cases show the models with the same specified structure since similar factors

have been found to have significant roles in all cases. The results in general of the estimation are quite satisfactory in that the explanatory power of the equations is substantial while practically every coefficient is statistically significant and have theoretically the right signs. However, it is easily noticeable that a few variables that we have referred to in the beginning of this section are left out of the estimated models. This is due to the fact that their coefficients are either insignificant or have the wrong signs. Take wage index, for example. Its influence in the supply equations in both sectors is supposed to be negative since it represents part of the costs of production which is not verified by the empirical estimation. This variable cannot therefore be maintained in the system. The failure to perform well by this variable could probably be explained by its measurement (minimum wage offered to unskilled labourers) that shows a very volatile trend through the years. That the demand for national goods should be significantly influenced by the total nominal income confirms our basic hypothesis. Relative price does not play any role in this equation, possibly because the national sector includes many commodities the demand for which is price inelastic such as public transportation and services. The supply function of national goods (except for the wage level) and the demand function of international goods take on the form as originally anticipated. The supply function of international goods is best estimated by a time trend. The price elasticity of primary products in general is known to be rather small and their output depends to a large extent on non-market factors. Experiments with other exogenous variables such as the size of the damaged areas did not work out either, leaving the time trend as the best explanatory factor.

The total marginal propensity to consume (based on GDP) which is equal to the sum of the marginal propensity to consume in national and international sectors in all three cases falls within a credible range, i.e. 0.72 in case I, 0.79 in case II, and 0.74 in case III. This result in a way lends support to the credibility of the estimated equations. The distribution of the effect of an increase in income on the demand for national and international goods varies from case to case. In the first case the effect is roughly equally distributed over the two sectors, with the balance tipping slightly in favour of the national sector. In the second and third case the effect is clearly larger for the demand for international goods than for national goods. For the third case this result is understandable in that part of the service sector is allocated in the international sector, pushing up the demand of its products. Considering the normal trend and circumstances the result as depicted in case I more truly reflects the real tendency. Since the bulk of the products in the international sector is agricultural and it is obvious that the propensity to consume more foodstuff when income increases cannot be large, the rise in consumption due to the rise in income therefore tends to be shifted towards the national products which include commodities as services, housing, electricity etc. Furthermore the observed series of data for the national and international products between 1960 and 1973 demonstrates a consistent shift towards the national products, the real output of the national sector being smaller than that from the international sector from 1960 to 1966 and larger from 1967 onwards (consult Table 6).

Corresponding price elasticities in the last two cases are all larger (sometimes twice larger) than those in the first case since the price coefficients assume a much larger magnitude. Large price elasticities for either demand or supply in a developing economy do not look realistic considering its production structure and dependence on capital goods and inputs from abroad. Moreover, in case III the coefficient of the relative price factor in the equation of the demand for international goods is not significant

which is probably due to the inclusion of services in the international sector. Services traded in this sector can be said to be influenced by anything else but prices. All in all, the model as estimated in case I seems to have the most favourable and reliable characteristics compared with the other two. We therefore choose to derive the relationship between P_n and P_i from the model of case I. In so doing we arrive at a function of quadratic form in P_n :

$$860.07 P_n^2 - 55,734.42 P_n + (168,747.06 + 24,648.40 P_i) = 0 \quad (30)$$

By varying the magnitude of P_i according to the desired policy, we can solve the equation for the corresponding values of P_n . Due to the form of the equation, for each value of P_i there will be two solutions for P_n . Since one of the two solutions usually does not represent a logical consequence (e.g. too large or too small, or wrong sign) the most appropriate one should be selected. It is interesting to note that eq. (30) in its quadratic form has an advantage over its theoretical predecessor (eq. 11) which is a normal linear equation. The solutions derived from eq. (30) seem to be more logical in that the impact of a rise or fall in P_i on P_n needs not be symmetrical (with opposite signs) as in a linear one-to-one relationship. From the exercises it will be seen that the upward impact of a rise in P_i on P_n is relatively far larger than the downward impact of a fall in P_n . This result is compatible with the reality where the effect of a decrease in P_i on P_n is generally weak whereas the increase (as seen from the recent crises) has a much more far-reaching effect.

TABLE III

Impact of Changes (increase vis-à-vis decrease) in International Price on National Price

ΔP_i (%) (> 0) increase	ΔP_n (%) (> 0) increase	P_i (initial $P_i = 139.3$)	P_n (initial $P_n = 142.7$)	ΔP_i (%) (< 0) decrease	ΔP_n (%) (< 0) decrease	P_i (initial $P_i = 160.2$)	P_n (initial $P_n = 159.1$)
5.0	4.8	146.3	149.5	5.0	0.3	152.1	158.6
6.0	5.3	147.7	150.3	6.0	0.7	150.5	157.9
7.0	5.9	149.1	151.1	7.0	1.2	148.9	157.2
8.0	6.5	150.4	152.0	8.0	1.6	147.3	156.6
9.0	7.1	151.8	152.9	9.0	2.0	145.7	155.9
10.0	7.8	153.2	153.8	10.0	2.4	144.1	155.3
11.0	8.4	154.6	154.7	11.0	2.8	142.5	154.6
12.0	9.1	156.0	155.7	12.0	3.2	140.9	154.0
13.0	9.9	157.4	156.8	13.0	3.6	139.3	153.4
14.0	10.7	158.8	157.9	14.0	4.0	137.7	152.8
15.0	11.5	160.2	159.1	15.0	4.8	136.1	152.2

The results presented in Table 3 bear out this pattern. The first four columns demonstrate the effect of a series of percentage change of P_i on P_n when the change is an increase while the last four columns demonstrate the case of a decrease^{12/}. Particularly when it comes to a fall in P_i it is most striking to observe that the accompanying fall in P_n tends to be rather small and amounts to only a tiny bit of the initial fall in P_i . In order to contrast these effects of the rise and fall in P_i on P_n and to compare this impact with the one theoretically constructed in the preceding section, we have contrived to set up two separate regressions, one using only the "increase" data and another using only "decrease" data. The results are as follows:

$$(a) \text{ increase in } P_i \\ P_n = 49.09 + 0.68 P_i \quad R^2 = 0.99 \quad (31)$$

$$(b) \text{ decrease in } P_i \\ P_n = 98.18 + 0.40 P_i \quad R^2 = 0.99 \quad (32)$$

There is thus quite a substantial difference between both marginal coefficients reflecting the remarks made above. The marginal coefficient obtained as an example in the preceding section which amounts to 0.46 lies in between both cases and therefore seems to be realistic enough as a proxy average of the above coefficients. Another coincidence which is even more striking happens when we regress P_n on P_i using the actual time series data of both factor (see table 6). The following result is obtained:

$$P_n = 67.36 + 0.48 P_i \quad R^2 = 0.02 \quad (33) \\ (1.46) \quad (1.09)$$

This time the marginal coefficient is almost identical to the one derived from the theoretical framework. In spite of this^{13/} the theoretical and empirical exercises have not been futile. The results are credible enough judging from the coefficients with comparable size arrived at from different angles. They furthermore furnish us with more useful information that cannot be captured when a simplistic and most direct method is used. If the relationship would be based on eq. (33) alone, it would be hard to maintain since the variations in P_i do not seem to be able to explain the variations in P_n to any significant extent. Besides with too low t-statistics the coefficient is actually statistically insignificant. Relying on this regression alone one would have judged that no worthwhile relationship between the two sets of prices exists. By constructing the theoretical framework, an attempt was made to demonstrate how such relationship can come about. Although the numerical example of the theoretical relationship may not be the most accurate, it gives us an insight into the important components that make up that single coefficient. With empirical tests another step further was taken. Not only that the relationship was then empirically estimated but also the finer points were extracted from the relationship. It is certainly practical to know that lowering P_i cannot possibly have similar impact on P_n (in the opposite direction) as when P_i increases. Should we be able to control and bring down P_i , we should be spared the illusion of significantly lowering P_n although both effects taken together could be meaningful.

TABLE IV

Impact of an Increase in International Prices on the General Price Level,
Total Nominal Income, and Trade Balance

ΔP %	P_i (initial $P_i = 139.3$)	ΔP_n %	P_n (initial $P_n = 142.7$)	Δ (GDP deflator) %	GDP deflator (initial deflator = 141.0)	Total income (current price) million bahts	Trade balance (current price) million bahts
2.5	142.8	3.46	147.6	2.99	145.2	177,410	- 10,219
5.0	146.2	4.78	149.5	4.89	147.9	181,828	- 12,336
7.5	149.7	6.21	151.6	6.82	150.6	186,709	- 14,865
10.0	153.2	7.75	152.1	8.81	153.4	191,684	- 17,529
12.5	156.7	9.51	156.3	10.89	156.3	197,635	- 20,949
15.0	160.1	11.49	159.1	13.09	159.5	204,097	- 24,871

^{12/} The case of the decrease starts off from different initial P_i and P_n since we assume that P_i should be allowed to rise first to reflect the real situation. The decrease then is portrayed to begin from the situation that P_i has already increased by 15 per cent.

^{13/} As one can then argue that it would have been much easier to take the most direct way to establish the relationship between P_n and P_i instead of going through a whole lot of trouble.

TABLE V
Impact of a Decrease in International Prices on the General Price Level,
Total Nominal Income, and Trade Balance

ΔP_i %	P_i (initial $P_i = 160.2$)	ΔP_n %	P_n (initial $P_n = 159.1$)	Δ (GDP deflator %	GDP deflator (initial deflator = 159.5)	Total income (current price) million bahts	Trade balance (current price) million bahts
- 2.5	156.1	+ 0.90	160.38	- 0.69	159.0	207,073	- 27,122
- 5.0	152.1	- 0.35	158.59	- 2.46	155.5	202,912	- 24,734
- 7.5	148.1	- 1.55	157.89	- 4.20	152.8	201,284	- 23,990
- 10.0	144.1	- 2.68	156.27	- 5.93	150.1	197,519	- 21,994
- 12.5	140.1	- 3.77	154.72	- 7.65	147.2	193,916	- 20,177
- 15.0	136.1	- 4.81	152.24	- 9.39	144.5	188,151	- 17,246

From Table 4 it can be observed that as P_i and P_n keep on rising there will be an accompanying rise in the total nominal income which is due to the price incentives from both sectors. With price rise the trade balance deficit widens which is mainly due to the increase in the demand for international goods because of the rise of the nominal income. Although these figures are in no way projections—and we do not have the pretension that our simple model can generate close projections—they are useful in showing the directions of changes. Table 5 contains the results of an attempt at policy simulation by first assuming a 15 per cent increase in P_i as an initial situation and then lowering it step by step. The fall in P_i and P_n is accompanied by a decrease in the total nominal income mainly because of the price disincentives. As a consequence the trade deficit moves down as the demand for international goods begins to slow down. Compared to the initial situation the trade gap improves only after the fall in P_i passes the 5 per cent mark. In trying to cope with the inflation coming from outside of the economy by depressing both price levels, and consequently the demand, there is a real danger of going too far with the deflationary measures which can force the economy into a slump. Most economic measures are known to have their positive and negative side and their application therefore requires a delicate balance and a set of clear-cut objectives to aim at.

CONCLUDING REMARKS

In this paper an attempt has been made to establish the relationship between the price of international goods and the price of national goods in a way that yields as much necessary information as possible. From the basic theoretical model we have learned what the components of the impact coefficient are and how they influence the magnitude of the impact. It is for example ascertained that the greater the size of the international sector the larger will be the impact of the international price on the national price, and that the lower the price elasticity of the supply of international goods and the higher the price elasticity of the supply of national goods, the smaller will be the impact. It is also interesting to add that by assuming the most likely magnitude of the price and income elasticities we have been able to produce a numerical estimate of the impact coefficient which comes very close the one estimated from the actual time series data and other estimates from the empirically estimated model. From this last model the relationship between both prices has been shown to differentiate between the effects of the increase and decrease of the international price. Considering the substantial upward pressure and the relatively light downward pressure of the international price on the

national price, the effort to stop or slow down the increase of the former should already be most rewarding in fighting inflation. The most commendable policy should therefore aim to affect the international price which is easier said than done. On the one hand, the fiscal policy—most widely recommended—that lowers import tariffs and removes direct import controls can lead to a fall in the international price while promoting free trade at the same time. One major drawback of this policy is that an important source of government revenue will be lost that has to be redeemed by imposing export premium on commodities that fetch abnormally high prices.^{14/} This in turn puts a different limit to free trade and discourages a healthy outward-looking policy of export promotion. On the other hand, the exchange rate policy has been recommended to supplement what the fiscal policy has left off.^{15/} This policy—while not guaranteeing any direct link between the exchange rate and the international price which can only be assumed—is, however, more strongly prone to obstacles and drawbacks than the fiscal policy since it involves a much larger number of important factors which must be fully taken into consideration. The issue is made even more difficult and controversial when it is recognised that a host of these factors stretch themselves into the non-economic realm which necessitates a much deeper and more comprehensive study to gain a true insight into their functioning and degree of importance. But that is a different story.

^{14/} After this paper was written in June 1974, on July 10, 1974 large-scale custom tax reductions on 306 items including food, pharmaceutical products, raw materials and machinery were introduced by the government. The action would reportedly cost the government about 800 million bahts a year.

^{15/} See, Randall Hinshaw, "Currency Appreciation as an Anti-Inflationary Device," *Quarterly Journal of Economics*, Vol. LXV, Nov. 1951, No. 4, pp. 447–462.

TABLE VI
Time Series Data of Selected Variables (1960–1973)

	GDP	Cases I,II (1962 price)			Case I		Case II	
	current price Y million bahts	Q _{ns} million bahts	Q _{is} million bahts	Q _{id} million bahts	P _i	P _n	P _i	P _n
1960	53,984	26,740	29,329	30,143	104.9	86.8	98.2	94.2
1961	58,970	26,422	32,608	32,299	104.1	94.7	96.7	103.9
1962	63,793	30,351	33,442	35,248	100.0	100.0	100.0	100.0
1963	68,079	32,710	36,415	39,356	98.7	98.3	96.2	101.0
1964	74,667	35,974	37,719	39,586	99.1	103.7	97.3	105.6
1965	84,303	38,878	40,609	43,145	100.1	112.3	106.2	105.9
1966	101,375	43,191	45,998	51,286	100.0	128.2	114.9	112.3
1967	108,294	49,195	46,941	55,984	99.1	125.6	113.8	111.6
1968	116,774	53,160	51,126	63,844	95.7	127.6	110.8	113.1
1969	128,566	56,658	55,888	70,601	95.3	132.9	112.7	115.8
1970	135,939	62,155	58,573	71,457	98.4	126.0	107.9	117.0
1971	145,340	65,389	62,337	71,036	99.9	127.0	109.4	118.0
1972	160,162	69,055	62,566	69,784	105.1	136.7	125.1	118.6
1973	201,945	75,055	68,072	85,220	139.3	142.7	146.8	136.0

Part 4

Trade

A HISTORY OF RICE PRICE POLICIES IN THAILAND*

Ammar Siamwalla

THE BEGINNINGS OF THAI RICE EXPORTS UPTO THE SECOND WORLD WAR

Thailand began its career as the rice granary of Asia in 1851 when King Rama IV who had just ascended the throne lifted the traditional ban on general exports of Thai rice. Prior to this, there were exports of rice from Thailand to some countries, e.g. China and occasionally to various British settlements on the Malay Peninsula, but these irregular exports were made for diplomatic reasons. Indeed the lifting of the rice export ban itself was dictated more by diplomatic than economic reasoning. The Thai leadership at that time was remarkably aware of the capacity of the Western powers to force them to adopt economic policies most in vogue in the West at the time. The lifting of the rice export ban in 1851 was a "signal" to the West that Thailand was willing to revise the policies of the previous monarch which were responsible for the ban and for rebuffing Western efforts at "opening up" Thailand. The "signal" had its effect. The British sent a new mission and, in 1856, the famous Bowring Treaty was signed. The treaty inaugurated a seventy-year era of almost completely free trade in Thailand. It was to bring a massive change in the style of life for most Thais, most particularly those inhabiting the Central Plains.

The period was followed by a rapid expansion of rice exports from Thailand. The story has been so well chronicled by J.C. Ingram in his standard work^{1/} that it would be useless to repeat it here. For the present, let me review certain historical features that caused Thailand to occupy an almost unique position among Asian nations today.

Thailand in the second half of nineteenth century shared in common with all other mainland Southeast Asian countries (excepting the Northern part of Vietnam) a sparseness in population that stood in sharp contrast to the two large Asian countries, India and China.^{2/} The extremely low man-land ratio enabled Thailand and other S.E. Asian countries, particularly Burma and Vietnam to export rice in large quantities, for not only had these countries land in abundance, but the deltaic lands of these three countries were eminently suitable for rice and almost for nothing else.

* This paper is one of a series reporting the results of a research project on rice economics and policy in Thailand. This project is joint between the Faculty of Economics, Thammasat University, the Department of Agricultural Economics, Kasetsart University, and the Food Research Institute, Stanford University. Views expressed in this paper are mine, and not necessarily those of the sponsoring agencies. I am indebted to Drs. Walter P. Falcon and Delane E. Welsch for encouraging me on this project. The extremely arduous research on past policies was carried out by my excellent research assistant, Miss Nuannute Piriyaithayopas.

^{1/} J.C. Ingram, *Economic Change in Thailand, 1850-1970*, Stanford, Stanford University Press, 1973, Chapter 5.

^{2/} W. Zelinsky, "The Indochinese Peninsula; A Demographic Anomaly," *Far Eastern Quarterly*, Vol. IX No. 2, (February 1950), pp. 115-145.

A great deal of historical work still has to be done to do justice to the massive changes in these countries.^{3/} As to the effects of these changes on the "welfare" of the rice farmers, opinions differ. One may cite the following proclamation from King Rama IV;

"It is announced to all officials high and low and to all the people living in and out of the city that in this year the rain has been good and rice yields have been good in every district. News of this has reached foreigners who have sent many ships to take away the rice. New rice prices have gone up for trading has been brisk

Those lazy (sic) people who do not grow their own paddy and have to purchase rice from others would ever want rice prices to be low. Now if rice farmers obtain a low price for their rice which is not worth the labour that they put in, they would be discouraged and leave farming for other activities. That is why the King has kindly permitted rice exports so as to benefit the people."^{4/}

In this proclamation (which is dated 1856) the entire problem of the Thai rice trade both then and down to the present is very clearly seen. It cannot be disputed that trade led to higher prices for rice at first, but what is usually disputed is the implication that these high prices trickled down as benefits to the farmers and whether these benefits (if they indeed were benefits) lasted long. Thus in Burma there is a constant refrain, coming particularly from J.S. Furnivall, to the effect that free trade policies have generally been a disaster for the Burmese, in the long run, because the Burmese could not cope with the free market system and ended up being poor tenant farmers in lands owned by Indian moneylenders. The Vietnamese peasantry's share of the gains from free trade is also questionable, although Robert Sansom's conclusion that the welfare of the peasants increased up to the 1930's and dropped off sharply after that, seem to be reasonably close to the truth not only for Vietnam, but for Burma and probably Thailand as well.^{5/}

For Thailand, whether the effects of these free trade policies have been positive or negative is very much a moot point, pending more systematic research. Nevertheless, it can safely be said that the social strains caused by the Thai peasantry's thrust into the market economy have been considerably less than in the two neighbouring countries that were its rice exporting competitors, Burma and Vietnam. That, ultimately, is the reason why Thailand is in the unique position it is in today, for the conservative elite has been able to retain enough political control to enable it to function effectively with an open economic framework.

^{3/} I have essayed a comparative study of the three countries Burma, Thailand and Vietnam elsewhere. See my "Land, Labour and Capital in Three Rice Growing Deltas of Southeast Asia, 1800-1940," *Economic Growth Center Discussion Papers* No. 152 (July 1972).

^{4/} *Prachoom Prakat Ratchakan Thi si* (Collected Proclamations in the Fourth Reign), Proclamation No. 95.

^{5/} For Burma, see J.S. Furnivall, *Colonial Policy and Practice*, Cambridge, Cambridge University Press, 1948, for Vietnam, see Robert Sansom, *The Economics of Insurgency in the Mekong Delta*, Cambridge, Mass., The M.I.T. Press, 1970, Chapter 2.

THE IMMEDIATE POST WAR PERIOD (1945–1954)

Even though Thailand finally obtained substantial fiscal autonomy by 1926.^{6/} Government intervention in peacetime rice trade was minimal and remained so even during the war. It was only with the ending of the war and in the highly volatile political and economic situation then that the government, abruptly and massively, entered the rice trade.

The war itself has damaged Thailand very little. What was thoroughly damaging however was the fact that Thailand was on the wrong side during most of the war. The result was that with the ending of the war, the Allies occupying Thailand felt no compunction in burdening Thailand with the task of supplying to an acutely rice-short world $1\frac{1}{2}$ million tons of rice free of charge as war reparations. This was formalized in a treaty dated 1 January 1946.^{7/}

This agreement was the starting point of the government's entry into the rice trade. Clearly only the government has the capacity to buy rice locally at whatever the price was in the local market and exporting it at zero price. The drain on the budget would be immense and would get steadily worse as world prices were moving up, pulling along the domestic prices. The primary objective of the government at that time, not surprisingly, was to depress domestic prices and thus to try and shift part of the burden of reparations back to the farmers.

The government attempted to achieve this objective by banning altogether private trade in rice and assigning to a newly set up Rice Office the sole right to export rice. Given the dislocations caused by the war, lack of money and lack of motivation on anybody's part to pay the full reparations, the creation of this Office did not lead to any success in its alleged objective.

These vain attempts of the Thai government to send rice as reparations went through constant renegotiations, until, finally in August 1947, Thailand was permitted by the Allies to export rice at the same price received by other exporters from the Allies, but which was still below the full market price. Eventually Thailand freed itself from all UN. obligations in 1948. Had the government then wanted to return to the pre-war position, it could withdraw from the rice trade altogether, close down the Rice Office and permit free trade in rice again. But the government decided to retain the Rice Office because it saw the possibilities of using the monopoly of the Rice Office as a means of obtaining revenue for itself. For the monopoly power carried with it theoretically the power to depress domestic prices below foreign prices and profiting from the difference. As a result the Rice Office's monopoly was retained until 1954. But it should not be concluded that trade in rice was conducted through the Rice Office, and only through the Rice Office, during this period. In fact, however, what emerged was a peculiarly Thai arrangement whereby the government retained in name the monopoly power, but where a great deal of the rice trade was conducted by private exporting firms.

The system operated as follows: all the initiatives with respect to the marketing of Thai rice overseas excluding government-to-government sales came from these private exporters. They would then attempt to obtain an export license from the Ministry of

^{6/} In 1926 Thailand had still to declare to Britain that she had no *present* intention to increase export duties on rice.

^{7/} The account that follows rests largely on Ingram, *op. cit.*, pp. 87 ff. and S.C. Yang, *A multiple Exchange Rate System*, Madison, Wisconsin, University of Wisconsin Press, 1957, Chapter 3.

Commerce who would then send officials from the Rice Office to check the firm's stocks and the grades to be exported. The role of the Rice Office ended there even though the exporting was done in its name. The Rice Office collected a nominal fee. Thus even though the Rice Office had the monopoly technically, the role of the private traders was substantial, and complete as far as non-government-to-government sales were concerned.^{8/}

This licensing system was naturally much used as a means of imposing quantitative restrictions on rice exports. With the high profit margins induced by such restrictions, the system of quota allocation became a cause for much corruption and bribery. In 1950, there was then a successful attempt on the part of the mere honest civil servants to absorb the excess profit by collecting a "premium" which became a condition for obtaining a license. This was collected by the Ministry of Commerce. Oddly enough, it was not considered a tax but a kind of fee to be paid as a price for obtaining a license. This legal quirk has one important consequence. As it has never been considered a tax, it never was passed by the legislature. The executive alone had the power to impose, repeal or modify this premium. This permitted great flexibility in using the rice premium as a policy instrument, which remains to this day.

The "premium" was not, in the years prior to 1954, the only instrument used by the government to tax rice exports. Additional taxation was achieved by means of exchange control regulations, to which we now turn.

There was a great monetary disorder at the end of the Second World War which had its origins in the fact that during the War, with the Japanese Army in the country, it had become a yen-backed currency. The defeat of the Japanese therefore led to the collapse of the baht as it had only worthless yen reserves to back it up. The need for Thailand then was to build up her international reserves and to establish a baht parity which would achieve this aim.

It turned out that the 40 baht per £ rate declared by the Government in May 1946 was a considerable over-valuation of the baht. The rate recommended as being more appropriate was 60 baht per £.^{9/} Despite attempts at trade and exchange regulations, a black market rate began to emerge.

Finally, in 1947 the Government surrendered to the market forces and embarked on policies that "whitened" the black market in foreign exchange. A multiple exchange rate system was established. Thus, for non-traditional export goods, traders were permitted to sell the foreign exchange in the black market which was now called the free market. This fetched 60 baht per £ (pound). But for rice, exporters were supposed to surrender the entire export proceeds to the Bank of Thailand which was quoting 40 baht per £. This was in effect a substantial tax on rice exports, amounting to about 33½% of the

^{8/} A. Mousny, *The Economy of Thailand; An Appraisal of a Liberal Exchange Policy*, Bangkok, Social Science Association Press of Thailand, 1964, p. 36. Mousny implied that this arrangement was very limited in scope. Mousny in fact stated the following: "...In spite of the principle of the general monopoly of the Rice Office, these private transactions were sometimes authorised because they were considered as a useful source of information for further government-to-government rice agreements. The rate of the premium, at first as the result of an agreement between the Ministry and the exporters, became fixed unilaterally by the Ministry of Economic Affairs (the name at the time of the Ministry of Commerce) from 1952." (ibid., p. 36). An interview with a retired official of the Rice Office indicated that all trade that was not government-to-government was conducted by the private traders. Unfortunately there exist no hard data on the proportion of G-to-G sales for the period.

^{9/} Yang, *op. cit.*, pp. 30 ff.

export proceeds. This system was retained until August 1955, when the multiple exchange rates as far as it applied to rice came to an end. It was to a minor extent modified already in 1953, when part of the export proceeds could be sold in the free market,^{10/} but the proportion involved was relatively small.

In conclusion, the period up to 1954 saw the laying of the groundwork for the rice policies that was to follow in the entire post World War II period. The instruments used were somewhat complicated and even tortuous, sometimes intentionally so. Contemporary observers had to dig and probe a great deal before finding out what really was going on, as what appeared on the facade was not what actually took place. Historians looking back at the period had even worse problems because published documents on various crucial issues, e.g. the premium rates, were either non-existent or very hard to come by.

Nevertheless, the system that grew up during this period is in its essential features substantially the same as the one that was to be followed in the post-1955 period. There was a very high taxation rate on the export of rice—of the order of 30% or more, with the government imposing from time to time quantitative controls in addition to the export taxation. The objectives of the government at the time in doing these are primarily fiscal. There are two ways in which the government benefitted from this policy of taxing exports, first is of course the direct revenue that the government earned which at the time was substantial, as can be seen from the following.

TABLE I

Government Revenues from Rice Export Taxation 1947–1953.

Year	Exchange Profit earned by Bank of Thailand	Premium Plus Rice Office Profits handed to Min. of Finance	Export Tax	Total Revenue from Rice Export Taxation	Total Govt. Rev.	$\frac{(4)}{(5)} \times 100$
	(1)	(2)	(3)	(4)	(5)	(6)
1947	n.a.	32	--	32	996	3.21
1948	n.a.	166	--	166	1,692	9.81
1949	190 (a)	340	--	530	1,930	27.46
1950	111	180	--	291	1,136	25.62
1951	95	170	--	265	2,531	10.47
1952	336	365	74	775	3,347	23.15
1953	315	807	135	1,257	3,930	31.98

Source: Mousny, *op. cit.*, p. 37 except (a) which is roughly estimated from Yang, *op. cit.*, Table 26, p. 173.

A second, less obvious but nonetheless powerful fiscal motive sprang from the savings on the expenditure side. The postwar inflation had dealt a fearful blow on the real incomes of the civil servants. With the overall fiscal situation being very tight the government was not in a position to increase civil servants' salaries, on the other hand it was not willing to see its servants' income eroded by further cost of living increases. A cheap rice policy, therefore, fitted this requirement perfectly.

^{10/} Mousny, *op. cit.*, p. 40.

That the fiscal motive was the most powerful during this entire period could admit of no doubt. Nevertheless the plentiful availability of Thai rice in the immediate postwar world of extreme scarcity generated unshakable faith among those involved in policy-making that Thai rice enjoys a quasi-monopolistic position in the world market. Whether this faith is justified or not is probably the single most important policy question of post-war Thailand. Nevertheless this *perceived* situation leads to the policy recommendation that export taxation is justified as it shifts the terms of trade in Thailand's favour. Thai policy-makers have been quick in seizing this argument in justifying their policies, and it should be counted as a motive guiding government policies.

A final motive in favour at least of the taxation of rice exports is the possibility that the burden of the various taxes was on the exporters and middlemen. There was an added colour on this motive in that most of these are of Chinese origin. Given the rather stringent quantitative controls exerted by the government at the time and hence the opening up of a gap between foreign and domestic prices as a result, this was probably a correct inference. It of course did not explain or justify the resort to quantitative controls in the first place.

The interests of the two important sections of the population figured little during this period. First, the interests of the farmers were not considered. From time to time anti-Chinese statements would be made and the connection drawn between the existing State monopoly on rice trade and the possible elimination of the "exploiting middlemen," but these were not to be taken seriously. That the farmers were losing under this regime is clear when one considers the fact that when compared to the pre-war situation, rice prices have lagged substantially behind other prices, whilst farm productivity has not increased much.^{11/}

The other section that, oddly enough, did not figure very importantly at this time was the urban sector—at least that part of the urban sector excluding the civil service. There was the lip service paid to the idea of keeping the cost of living down, but it almost invariably was coupled with the statement that this was to help the lower sections of the civil service. The governments of the time (particularly after 1947) subscribed very strongly to the view that the urban sector consisted of civil servants and the Chinese, and once the former was taken care of, there was no need to concern oneself with the latter's welfare.

THE 1955 REFORMS

As can be discerned in the previous section, this paper interprets the changes that took place in 1955 as a matter of form rather than substance. The basic structure had already been shaped in previous four or five years wherein private trading in rice was recognised as legitimate as long as the government profitted by it. What was done in 1955 was basically to rationalize the system that had grown extremely complicated in form but was essentially simple in structure to reflect this latter simplicity better.

The first step was to recognize explicitly the existence of private trade and of the premium. This was done in an announcement of the Ministry of Commerce dated 31st December 1954 which imposed a premium of 400 baht a ton for head rice and 200 baht a ton for brokens on private traders who obtained export licenses. This tying of

^{11/} Mousny, *op. cit.*, pp. 38 ff. Mousny's comparisons seemed to be between 1938 and 1963, but the same results would hold for a comparison between 1938 and 1954, as there was little shift between 1954 and 1963. Mousny pointed out that between 1938 and 1963 rice prices have increased 13 times whilst general prices have gone up 19 times. Rice yields in 1938 was 231 Kg./rai whilst in 1963 it was 253 Kg./rai.

the premium to licensing is a necessary legal trick in order to avoid bringing the matter to the legislature.

In the earlier part of 1955, the requirement that traders have to sell the bulk of the foreign exchange earned to the Bank of Thailand at a lower rate was still in force. This was the more important source of revenue for the government. This requirement was abolished as from 15th August, 1955. The government attempted to retain part of the revenues however by raising the premium rates. The net effect overall was to reduce the tax burden on rice exports somewhat as that was the time of the post-Korean slump and the Thai government was keen to expand exports and earn foreign exchange.

With these changes in 1955 Thai rice prices were to depend entirely on the export control system thus developed, and which were to continue on to the present day. Stresses and strains were becoming apparent in the late 1960's and two new elements—one a failure and the other a nuisance—were then added to the system but these elements which will be presently discussed have as yet little overall impact on the basic system of control in the period 1955–1966.

The basic elements of control used by the Thai government to regulate rice prices were as follows:

- (a) Premium rates.
- (b) Quantitative controls on export volumes, including outright ban on exports.
- (c) Government-to-government sales. This measure will be examined in a separate study.

For narrative convenience, the years from 1955 on will be periodized as follows: the “classical” years between 1955 and 1966, the first crisis years from 1966 to 1968, the surplus years from 1968 to mid-1972 and, finally, the second crisis years from 1972 to the present. The reader is also referred to a chronology appendix detailing rice policy changes other than premium changes since 1955. This chronology is in fact designed to complement the work of Jittima and Welsch on rice premium.^{12/}

But before we go on to the narrative part, a few words ought to be inserted on the institutional background to policy-making on rice in Thailand.

THE INSTITUTIONAL BACKGROUND TO POLICY-MAKING ON RICE IN THAILAND.

For the entire period under discussion, the executive has been the dominant branch of government in Thailand, so much so that political scientists have labelled Thailand a “bureaucratic polity”

The main bureaucracy which we shall deal with here is the Ministry of Commerce (or, as it was known before 1972 the Ministry of Economic Affairs). This ministry is theoretically in charge of all aspects of the rice trade both internal and external. All government programmes or policies connected with paddy or rice once it has passed the farm-gate and when it is not in the rice-mill is supposed to be handled by this Ministry. The Ministry of Agriculture is in charge of all programmes connected with paddy production, whilst the Ministry of Industry oversees the rice mills. Irrigation is under a Department which is practically autonomous, even though, at one time it was under the National Development Ministry and now under the Ministry of Agriculture.

^{12/} Jittima Pookkachatikul and Delane E. Welsch, “Thai Rice Premium Data 1954–1973,” *Staff Paper* No. 12, Department of Agricultural Economics, Kasetsart University, Bangkok, 1974

But the roles of both the Ministry of Industry and the Irrigation Department in policy-making on rice have been negligible.

Since the policy on rice production is a general one of trying to increase yields, the Agriculture Ministry's efforts in this area have been dictated largely by the existence of worthwhile programmes (looked at from an agricultural expert's point of view) or availability of money or other such considerations. For a brief period during the glut of 1969–1971, low rice prices did have some influence on the thinking of some officials on the question of how far efforts should be made to push rice production up. Generally however, there has not been much tailoring of agricultural programmes to reflect relative prices of the various commodities, although this may change in the future.

The only policies that the government has used to influence rice prices have been trade policies, which thus means that in what follows, when we say the "government" we mean the Ministry of Commerce and vice versa.

The Ministry of Commerce has over the years built up a fair amount of expertise on the various quirks of the rice trade. Much of it is in the nature of folklore concerning the rice trade system and how it functions. Part of the essay will be concerned with the effort to translate this folklore into something more precise, under the assumption that there is a great deal of truth and wisdom behind the folklore. Even in cases where the folklore has no basis in truth whatsoever, it is important to understand it, because policies are framed with such folklore as a very important input.

THE "CLASSICAL" YEARS 1955–66

This "classical period" of the postwar Thai rice export system was marked by great stability in the world rice trade. The result is that changes in the rice premium were small, with emphasis being placed much more on varying the relative rates between grades than drastic changes of the overall level, of the premium.^{13/} Frequent use was made however of the more powerful application of quantitative restrictions, this method being applied in the second half of 1957, the whole of 1958, partially in 1959. It was again put into effect in much of 1962. The crisis years of 1966–1968 were ushered in by a partial reintroduction of the quantitative restrictions in 1965.^{14/}

Thus during this period, the primary instrument to stabilize domestic prices, the primary objective, was quantitative restrictions on the volume of exports. The signal for such action would be when the domestic prices rose above certain levels. From correlating points at which such actions were taken, the critical level appeared to be about 110 baht per picul for 5% rice.

It is noteworthy that policy at the time rested much more on signals from the prices, the reason being that information on the quantity side, e.g. rice production and consumption was very poor or non-existent. Nevertheless, attempts were made to compute rice availabilities. This was necessary owing to the fact that, while the signal for action came from the price side, the action itself was on the *quantity* exported.^{15/}

The preference of policy-makers for this method over the theoretically more elegant method of premium adjustments is to be explained primarily in terms of their preconceptions about the relative effectiveness of the two modes of control.

^{13/} *Ibid.*, *Passim*

^{14/} See Appendix A

^{15/} Until the Household Expenditure Survey of 1963 forced a considerable upward revision of estimates on the production side, the export quotas were set on the basis of much lower estimates emanating from the Rice Department. This has imparted an over-cautious bias to rice policy during the period.

As has been mentioned, it is almost an article of faith among policy-makers involved in rice management in Thailand that the foreign demand for Thai rice is quite inelastic. That this is so in years when there is excess demand (seller's market) will command general assent among Thai economists today.^{16/} Use of the premium as method of control would be somewhat inefficient in the sense that what policy makers think of as "reasonable" premium increases^{17/} would not reduce domestic prices by a sufficient amount. This is because, given a highly inelastic demand, the burden of a given premium increase tends to be shifted forward to the foreign market much more than backward to the domestic market. Quantitative restrictions, on the other hand, have been observed to have a prompt effect on domestic prices and are much preferred by policy-makers.

The presentation in the previous paragraph has been couched largely in terms of policy-makers' preconceptions. Academic economists could counter by citing the theorem that for every quantitative restriction, there is an equivalent tax which is superior from the fiscal point of view. Thus, in order to bring down domestic prices by a given amount, whether one uses premium changes or quantitative restrictions, the disruptive effect on the foreign markets will be the same. Hence, say the academic economists, the premium is a superior tool, in that the government will at least obtain the revenues which would otherwise accrue to private traders receiving quota allocations.

Policy-makers have had very little time for this line of argument. For rice, they have plenty of justification in not accepting the equivalence theorem. The theorem is valid in an equilibrium setting. In a year when excess demand conditions persist, arguments which lean heavily on this theorem would be based on unrealistic assumptions. For policy-makers bent on seeing *prompt* results of their actions, there is no gainsaying the effectiveness of quantitative controls.

The issue on which policy-makers could be criticised, however, is their reluctance to use the premium instrument effectively in times of high prices, if for no other reason than to have the fisc soak up the excess profits that accrue to exporters when quantitative restrictions are in effect. Thus at times of high prices and restrictions on exporters, their profits tend to be large, because of the inclusion of economic rent in the profits. This made policy-makers at the Ministry of Commerce easy victims of the charge that their preference for quotas rest on the desire to share in these profits.

Stabilization of prices during this period meant essentially lowering of prices at times when they are high rather than raising of prices when they are low. This asymmetry, a feature which was to become much more marked in later periods, was at this time disguised by the fact that the world price level was remarkably stable at a low level. Of the 10 years between 1956 and 1965 the f.o.b. quotation for 5% rice never strayed much from £45-£50 per metric ton level. When it did jump up, the highest it ever reached was £58 in November 1962. The lowest point was reached in mid-1960 when the quotations were around £41-42. No attempt was made then to adjust premium rates significantly to bring up the domestic prices which sank to 80 baht per picul.

As far as stabilization policies were concerned, this was therefore a "classical" period. It was relatively easy to control domestic prices at a time when world prices

^{16/} For a good theoretical discussion of this possibility, see K.J. Arrow, "Towards a Theory of Price Adjustment" in M. Abramowitz, et al., *The Allocation of Economic Resources*, Stanford, Calif. Stanford University Press, 1959.

^{17/} Reasonableness being defined in terms of minimization of the disruption in the foreign markets.

were stable. What little the policy makers had to do, they did adequately well, so that the stability of the world market was fully translated into stability at home.

The period was remarkable for the debate which opened up on the issue of rice premium not as a price stabilizing tool which it clearly was not, but as a long-term tax, which it clearly was. Leading the attack were M.C. Sithiporn Kridakara and Dan Usher.^{18/} The ensuing debate on the issue has been somewhat grandly compared to the Corn Laws controversy.^{19/} The issues that were raised can be separated into two levels, one empirical, and one on policy.

The empirical issues can be subsumed under the question, who bore the burden of the rice premium. The critics based their attacks on two premises:

- (a) The structure of internal rice trade is quite competitive so that it can be approximated by the perfect competition model.
- (b) The foreign elasticity of demand for Thai rice is very high at least in the long run, as Thailand has a very small share of the world's rice output.

Given these two premises it is easy to demonstrate that the bulk of the burden is ultimately borne by the farmers.

On issue (a) whatever empirical work has been done^{20/} tends to confirm Dan Usher's original findings at least for the Central Plains of Thailand where much of the surplus rice comes from. This took care of the frequently heard argument by the proponents of the premium that if it was abolished, the beneficiary would be the Chinese middlemen.^{21/} The argument of the proponents are correct however, when there are quantitative restrictions on exports. In this case, the burden of the premium is entirely on exporters.^{22/}

On issue (b), the critics are on weaker grounds. The use of Thailand's small share in World rice output (about 3%) as an indicator of elasticity is theoretically sound in the case where the world rice trade is freely competitive. In the actual conditions of world trade that existed even in that period, it is highly questionable. Only one empirical estimate exists of the long-run foreign elasticity of demand and the value is approximately one.^{23/}

^{18/} M.C. Sithiporn Kridakara, *Some Aspects of Rice Farming in Siam*, Bangkok, 1970; Dan Usher, "The Thai Rice Trade," in T.H. Silcock (ed.), *Thailand: Social and Economic Studies in Development*, Australian National University Press, Canberra, 1967. The papers were circulating well before the publication dates of either of these books.

^{19/} Ingram, *op. cit.*, p. 244.

^{20/} There are a couple of studies in Thai which are cited in Ammar Siamwalla "Khao", *Warasan Thammasat*, Vol. 3 No. 3, pp. 1-91.

^{21/} One holdout on the issue of the competitiveness is William Lee Baldwin, "The Thai Rice Trade as a Vertical Market Network; Structure, Performance, and Policy Implications," *Economic Development and Cultural Change*, Vol. 22, No. 2, (January 1974), pp. 179-197. But Baldwin agrees that even if the market were not competitive, the middlemen would pass part of the burden on to farmers.

^{22/} A long theoretical discussion could be carried out as to what is meant by "The burden of the tax" in such cases.

^{23/} H. Tsujii, "An Econometric Study of Effects of National Rice Policies and the Green Revolution on National Rice Economics and International Rice Trade among Less Developed Countries: with Special Reference to Thailand, Indonesia, Japan and U.S.," Ph.D. Dissertation, University of Illinois, 1973. Dr. Tsujii kindly supplied this reduced-form estimate which was obtained from the complex simultaneous equation model of the world rice trade.

This issue turns out therefore to be more complex than was originally envisaged by the critics of the premium and it is a weak link in their reasoning. The proponents of the premium have always cited the terms-of-trade argument in favour of this particular form of export taxation. Some proponents even argued that the entire burden rests on the foreigners.

This issue is far from resolved, but most would agree with the moderate view that *some* burden do rest on the farmers, especially in this period where the world rice market was as near a long-run equilibrium as it would ever be. Once these empirical issues were out of the way, there were policy issues that were also debated, such as the question of equity, the question of a development strategy based on a cheap wage-good policy, and the question of agricultural diversification.

But these were abstract debates conducted away from the realms of policy-making. Long-range problems, much loved by economists, seldom intruded into the decision-making process which was much more concerned with short-range almost day-to-day problems. The only matter which may be regarded as long-range which entered into consideration is the importance of the premium as revenue. Table II gives the revenue for premium for the years 1955–1971.

TABLE II
Revenues from Rice Premium 1955–1971. (in mn. baht)

Fiscal year	Rice Premium	Total Government Revenue	%
1955	441.3	4,185.4	10.5
1956	841.7	5,080.8	16.6
1957	840.3	5,198.5	16.2
1958	811.7	5,616.0	14.5
1959	755.9	6,055.2	12.5
1960	744.6	6,786.4	11.0
1961	689.5	5,689.9	12.1
1962	803.8	7,986.2	10.1
1963	798.4	8,633.1	9.3
1964	1,090.1	9,655.5	11.3
1965	1,248.9	11,157.0	11.2
1966	1,067.5	12,711.6	8.4
1967	929.3	14,874.1	6.3
1968	1,115.7	16,850.3	6.6
1969	1,249.4	18,361.7	6.8
1970	652.1	18,807.9	3.5
1971	261.6	19,886.6	1.3

Source: Statistical Yearbooks. 1958–1971, except the last four figures of the second column which is from Bank of Thailand *Monthly Bulletin*, December '73

The premium has provided the government revenues which were roughly stable in absolute amount in the period 1956–1966. Policy makers were somewhat reluctant to drop this source, even though the dependence on it is much less than in the early post-war period with the government now able to expand its revenues from other sources considerably.

THE FIRST CRISIS PERIOD 1966–1968

The real test for the classical methods of stabilisation came in the crisis of 1966–1968 when the magnitude of the price fluctuations went beyond the range of 1955–1966. Prices shot out of the £60 per ton limit in the middle of 1966 and climbed steadily to reach £90 levels towards the end of 1967 and early 1968, after which prices began to drop. To judge the effectiveness of this policy, let us first note the fact that the peak for the *domestic* price was 176.50 baht per picul reached in September 1967. This is about 75% higher than the “norm” for 1955–1966 which was about 100–105 baht per picul. The jump in foreign prices to £90 on the other hand meant roughly a doubling of the norm for 1955–1966 which was around £45–50 per ton. By this test therefore the classical methods have been moderately successful.

Indeed, rice policies during this period were marked by an efficiency and a lack of panic that would be so conspicuously absent in the second crisis period of 1972–73. Domestic prices were allowed to rise by a substantial percentage. While this was the occasion for some expressions of discontent from the urban population, Thailand (particularly urban Thailand) was at that time basking in the prosperity engendered after a long period of high growth rates in the early 1960's, and in the artificial stimulus created by the U.S. involvements in Southeast Asia. The government was able to justify the high prices that were beginning to be felt in early 1967 by arguing that it would benefit the farmers.^{24/}

But this argument about the desirability of high prices for farmers, whilst perfectly justifiable on equity grounds, immediately created a problem for the government. It required as the next logical step that the government also must take steps to help the poor in urban areas who suffered from high prices. It was here that the government took the one false step in the entire 1966–1968 crisis period. This false step had very little effect in this crisis itself but eventually became an important cause for the panic and failure of 1973. The false step is the introduction of a special cheap rice sales in the urban areas.

Actually this policy was first put forward in 1962, and special cheap sales of rice were made to specified consumers, mostly civil servants. The new departure in 1966 was significant: rice would now be available in shops,^{25/} and sold at prices below the market price to any buyer who wishes to buy, the only limitation being on the volume of sales per transaction. This policy was inaugurated in August 1966. Rice for this purpose was obtained by imposing a mandatory sales on exporters. The requirement was that for every ton of rice (of any grade) exported, a fixed proportion of rice (usually 5% and 10% rice) must be sold to the government. The proportion of the rice would be fixed according to the needs and vary a great deal. The ups and downs of this proportion, henceforth known as rice reserve ratio are traced out in Appendix B. Appendix B also shows the implied tax for the exporter, which has been calculated using the Bangkok wholesale price of rice for the particular grades as costs to the exporters.

This was a new weapon at the disposal of the government, but it was an extremely clumsy weapon. Indeed, so clumsy did it turn out to be that it effectively reduced the freedom of manoeuvre for the government sometimes at critical points; as

^{24/} Interview by Mr. Sunthorn Hongladarom, the then Minister of Commerce reported in *The Daily Trade News*, (Thai language newspaper), 4 March 1967.

^{25/} These shops are specially designated Thai-owned shops which would receive allotments from the Public Warehouse Organization—a government owned organization.

was to be shown in the crisis year of 1973. Between 1966 and 1968, the weapon was still a quaint addition to the arsenal of government policies, and did not get too much in the way of government action on other fronts. The reason why it worked was basically that the price set by the government as concessionary sales (32 baht per 15 kg. for 5% rice) was not too distant from the free market rice which was about 35–38 baht at the time. That also was the reason why demand was such that the reserve ratio was set at 15%.

The basic classical policy thus served Thailand reasonably well in this crisis period, although there were some significant quantitative changes in this policy, the most striking being the record level of the premium charged during this period, in some cases double that of the previous high points. It was probably its most active period as far as its usage as a policy instrument was concerned. As is usual during the times of high prices this instrument was used in tandem with the use of quantitative restrictions which remains the main controlling factor in policy.

THE SURPLUS YEARS: 1968 TO MID-1972

The realization that the classical policy had severe limitations came when prices began to drop. The high prices of 1966–1968 were creating a ratchet effect in the behaviour of Thai farmers. Once they had realized paddy sales of 1,400 baht a ton they were understandably less than happy when they had to go back to the 800–900 baht of the early 1960's. The government felt that it had to do something to help the farmers.

Having used the classical policies so successfully during the period of shortage, the government unfortunately retained the mental baggage acquired during that time. It became very reluctant to give up the premium, firmly believing that the elasticity of foreign demand is low. Whilst this essay has argued very strongly earlier that, in a period of shortage, this belief rests on very firm support, but to maintain this belief in the fact of severe competition that Thai rice had to contend with during the early 1970's was carrying consistency to the point of absurdity. The premium rates were shaded down but was retained almost at the levels of the early 1960's. It was not until April 1971 that the premium on all grades of rice except 100% and 5% was abolished. The retention of the premium on the two top grades was done because it was believed that Thai rice had a special quasi-monopoly status in Hong Kong and Singapore, the two major markets for these grades. The twin results of this stubborn policy was that (a) Bangkok wholesale price for 5% rice fell to 82 baht per picul in March 1971, a level which would have been considered low even in the early 1960's and (b) the share of Thai exports in the world market fell to 14.6% in 1970, the lowest since the war.^{26/}

The truly amazing action by the government during the period was to push forward on a price support programme for paddy at the same time as it was retaining the premium. This was begun in earnest in 1969. The programme itself was launched originally at the end of 1965, but as the support price was below the market price most of the time, the programme was not very effective.

The price support that was begun in "earnest" in 1969 was a total failure. The main culprit was allegedly lack of money. This was undoubtedly true, in a sense; but the lack of money itself was a reflection of the utter failure of the government to grasp the magnitude or indeed the nature of the task it was facing.

^{26/} Chaiyawat Wibulswasdi, "Thailand: A Case Study in Open Approach to Foreign Trade," Ph.D. dissertation, Massachusetts Institute of Technology, 1973.

Each normal year, Thai farmers would produce about 13 million tons of paddy, part of which they would keep for their own consumption, but another part they would place in the market usually within the first four or five months after the harvest. It is difficult to know how much of the rice entered the marketing system and how much was retained for on-farm consumption, but let us say 8 million tons for the market and 5 million tons for consumption.^{27/} These are order-of-magnitude figures. If there was to be an impact on the 8 million tons marketed, the price support programme must apply itself to a sizable proportion of these 8 million tons.^{28/}

The subcommittee in charge of this programme was given 150 million baht to engage in paddy procurement which at the support price would enable it to buy somewhat less than 150,000 tons. It was given no regular personnel, no financing for the building and no office facilities. Indeed it was surprising that the subcommittee was able to show the following purchase figures.

TABLE III
Purchase of Paddy at Support Prices

(1000 Tons)

1969	68.8
1970	60.9
1971	105.8
1972	16.5

Source: Internal Trade Department, Ministry of Commerce.

Given the administrative capacity of the Thai bureaucracy, particularly when placed in relation to the efficiency of the existing marketing system, it is doubtful whether a price support programme of the kind envisaged above (which entailed a replacement at least of part of the marketing system in private hands by the government) would yield net benefits to the economy, even if it had some impact on the market paddy price, which it did not. A far more economical method both in terms of administrative procedure and in terms of money spent would have been for the government to apply all the pressure at a key strategic point which in the Thai case would definitely be the export point.

Indeed, had the government drawn the correct lesson from the classical solution to the problem of high prices, it would have realised that the key to the problem of low prices would be to subsidise exports instead of taxing them. If there still exists premium on exports, it should be eliminated. Unfortunately this was not done. The result was that paddy prices dropped steadily from a high of 1,505 baht a ton in September 1967 to a low of 765 baht in April 1971 (the price of the equivalent paddy in September 1971 was 980 baht).^{29/} The elimination of the premium in April 1971

^{27/} I assume that 55% of the population are paddy farmers and their dependents which in 1970 would yield a figure of about 20 million. These 20 million consume paddy at the rate of 250 kg. per annum which yields the 5 million tons for on-farm consumption.

^{28/} The view of the Ministry of Commerce is that it has to be a sizeable proportion not of the marketable surplus but of the exportable surplus, in which case the relevant figure is about 2-3 million tons. Anant Poocha-oom: "Kan Payung Raka Khao Pluak" *Daily Trade News* (Thai language paper), 24 May 1973.

^{29/} All prices are for first grade (5%) paddy, Bangkok wholesale, Business Economics Division, Internal Trade Department.

helped matters somewhat, but the huge stockpile of rice that built up as a result of faltering exports continued to be a drag on the market.

The management of rice policy in the period from 1968 to 1972 was thus a record of lost opportunities and general failures. It is because almost for the first time, the Thai government tried to raise rice prices instead of keeping them down and it was the inexperience of the government in this novel venture which eventually led to failure.

THE SECOND CRISIS PERIOD (1972-1973)

The very rapid recovery of Thai rice exports in 1972 was greeted with joy on all sides in the beginning. Indeed at least as far as the early part of 1972 was concerned, it was genuinely a recapturing of export markets which were thought to have been lost to competitors.

By the middle of 1972, the worldwide effects of the extremely odd weather pattern of that year were becoming known, and rice prices were beginning to pick up. The Thai government began to take classical measures in August with the addition of the new reserve requirement tool. Concern was expressed about the state of the Thai rice crop which turned into alarm as it began to be realized that the crop this year would barely enable Thailand to break even, with a small and statistically uncertain exportable surplus.

These conditions led the government to step up the use of the classical measures to choke off private exports. Unfortunately the government itself unwisely concluded some extremely large sales on a G-to-G basis, particularly to Indonesia.

As news of this reached the market, prices began to climb very rapidly. Also now a completely new element entered the picture which caused the whole situation to get completely out of control. The villain of the piece is the sale of cheap rice out of the reserve requirement.

The sale of rice out of the reserve requirement was, as has been stated, conducted at a price somewhat below the market price. As long as the difference was small, as was the case in 1966-1968 (See Appendix D, the price difference, which was there given as a tax on export, also measures roughly the difference between market and concessionary price). In the second quarter of 1973, the difference began to widen rapidly. With the widening of this difference, the casual way in which the whole programme had been administered proved disastrous. Large leakages occurred from the government shops to the free market. The release of the reserves to plug the leak proved woefully inadequate. Long lines of customers developed at the rice shops.

The Thai system is almost a text-book showcase of the economy where the price mechanism reigns supreme. As a result, its efficiency (again in the text-book sense) in making the goods available in the right shops at the right time, (but not necessarily at the "right" prices) have been unquestionable. For most Thai consumers, standing in line for any commodity is an indignity, doing so for rice is an affront to their sense of decency. The government was pushed into action.^{30/}

The first move made by the government was therefore to ban all exports of rice, which the government did on June 12. Unfortunately the rice reserves which were being sold

^{30/} Thus the *Nation* (June 20, 1973 issue) reported: "...Field Marshal Prapass Charusathiarra reportedly very disturbed by newspaper pictures showing long queues of rice buyers demanded that the deadline [of an ultimatum by the Cabinet to the Ministry of Commerce to "solve" the crisis in three days] be met and be accompanied by the disappearance of such scenes." (Emphasis mine).

to the public cheaply had their source in the requirement that exporters supply a certain proportion (at this time 100%) of rice for every ton exported. With the cheap government rice selling briskly whatever stocks the government had dwindled rapidly, as with no export there is no replenishment. Somewhat melodramatically, the Ministry of Commerce announced that the rice reserve ratio will be increased to 200%, perhaps hoping that every body would forget that 200% of zero is exactly equal to 100% of zero, hoping that the drama of the announcement would overwhelm its absurdity, and would thus have a depressing effect on prices. Oddly enough this hope seemed to have been justified, as the Press generally commented on the drama and overlooked the absurdity.

The lines however stubbornly refused to shorten as the government price (at 36 baht per 15 Kgs of 5% rice) remained significantly below the free market retail price (at about 45–50 Baht). A crisis atmosphere pervades the Press discussion of the "crisis". Although the low 1972 crop was expected to last until the new main crop that would begin to appear in late November, with an extremely small and statistically uncertain margin to spare, parts of the Press were making alarming "calculations" that the rice would be exhausted in July, with no supplies left for the remaining five months of the year!^{31/} While production statistics in Thailand are recognised to be bad, the implied 42% error is a bit hard to swallow.

These alarmist discussions eventually led to panic buying also from the free market. Ministers (the poor Minister of Commerce appeared to have been at this time drowned out by the clamour) began to *advocate* price controls for the free market, but which was never implemented, whereupon rice began to disappear from the free market as well and became almost unavailable at any price.

After floundering around for plausible villains, statisticians, smugglers and even American GI's being first chosen and then discarded, the government predictably settled on the hoarders as the culprits. Emergency powers were given the grotesquely-named Board for Inspection and Follow-up Government Operations (BIFGO) which seized 134,000 tons of rice "hoarded" in Bangkok in 4 days. Considering that in normal times Bangkok is the export point for about 1.2 mn. tons exported annually, that its citizens consume about 300,000 tons annually, as well as the fact that it is the entrepôt for much of the internal flow of rice from the surplus North to the deficit South, this amount seems insignificant.

Whether it is this energetic action by BIFGO, or whether the second crop was rather good (it supplied only 500,000 Tons (paddy) compared to about 11.8 mn. tons for the main 1972 crop), or whether the Press had other more dramatic news to take care of and hence reduced some of the panic atmosphere, or whether, as is most likely, the severe measures taken in June and July were making themselves felt at last, the rice crisis mysteriously disappeared from view by the end of August.

The rice crisis of mid-1973 was both a consequence of, and in turn had its effect on, the political crisis which in the end led to the downfall of a very long-established regime. The problem of finding an optimal mix of policies to manage the rice economy has not been resolved by the new government, particularly the problem of what to do with that dangerous weapon that it now has in its hands, namely, the cheap rice sales out of rice reserves deposited with the government at the time of export. What the new government has done however is to give an aura of orderliness and calm to the rice trade which is a much needed change after the madhouse atmosphere of mid-1973.

^{31/} The *Nation* (June 4, 1973 issue) Article entitled "Rice crisis: More Than a Big Embarrassment" by Authapol Wananuraks.

AN OVERVIEW OF THE PERIOD 1955–1973

What has been the government's primary objectives during this period when it tried to manage the rice trade by various means, and had there been any changes in these objectives?

The first thing that needs pointing out is one simple fact which may have been forgotten in the details of the rice trade and that is that during the period the overall economic structure of the country has changed considerably. From being a monocultural economy, Thailand now has a somewhat more diversified structure.

This diversification is of some importance when one considers the fiscal needs of the government. The secular decline of the importance of rice premium can be clearly seen in Table II. This secular decline means essentially that the government can use the premium as a more flexible policy instrument than would be the case if it was to provide a substantial portion of the government wherewithal.

One aspect of the diversification is the much enhanced role of the city, which in Thailand means the city of Bangkok. If its economic importance has grown substantially, its voice has grown even more strongly. The government can ignore changes in its moods at its own peril—and this applies as much to the military dictatorship as well as to civilian “democratic” régime. The voice of the farmer has been however much more muted, particularly when no representative parliament of any kind existed, i.e. in 1958–1969 and 1971–1973, 13 out of 18 years under consideration. This lack of even-handedness in the government response to the rice question is one reason why domestic prices have been kept below world prices even in years when the latter are already quite low.

Whilst the main impulse for the export taxation and the resulting low domestic prices have been to help the fisc—particularly in the earlier period, and to placate the urban populace in the latter period, the main intellectual argument propping this policy has been the argument that Thailand's terms of trade against the rest of the world would be thereby improved—an argument which can only be demolished empirically and that after constructing probably a very complex econometric world rice trade model.

Now that the heavy burden that such a policy imposes on the rice farmers are being realised, moves are beginning to be made, not to abolish the premium as this would adversely affect Thailand's terms of trade, but to “recycle” systematically as much of the government revenues as possible back to the farmers in the form of various programmes. However, this would still be inadequate. Farmers are now bearing a double burden of taxation: first, the burden of the premium actually collected, and second, the burden of the implicit subsidy to the urban dwellers. This proposal takes care of the first burden, but leaves untouched the second, which may be larger, in size.

As the political balance in the country is very much in a state of flux at this time of writing (November 1974) any forecast on the future of rice prices in Thailand as will be determined by her politicians would be an even more hazardous undertaking than usual.

It is perhaps appropriate that this paper closes with a tone of uncertainty as given in the previous paragraph.

APPENDIX A

CHRONOLOGY OF THAI RICE TRADE POLICY 1955-1973

(Excluding Premium Policy)

Date	Quantitative Restrictions	Sale of Rice to Government	Export Promotion	Miscellany
13 August 1955				Lift Exchange Control regulations. (see text) Set rules on standards. Redefine grades.
22 January 1957				
20 May 1957				
17 August 1957	Set overall target for second half yearly export of 530,000 tons.			
26 August 1957	Each exporter cannot export more than 30% of the exports in the first half.			
4 October 1957	Raise above figure to 45%.			
30 November 1957	Raise above figure to 48%.			
31 December 1957	Restrictions lifted.			
1 January 1958	Exporter must obtain license and pay premium within 3 days.			
1 April 1958	Monthly export targets set.			
Sept.-Oct. 1958	Export ban.			
November 1958	Restrictions lifted.			
Early 1959	Ban on exports of lower grade rice.			
Late 1959	Lift ban on lower grades			
1960			Promote direct exports from Southern ports. Government will aid traders in finding markets. Mission to foreign markets rewards to Hong Kong and Singapore importers who purchase more than specified amounts.	
23 February 1962	Exporters shipping more than 1,000 tons must obtain permission before finalizing deals.			
19 March 1962		Exporters must sell rice to government equal to 15% of export volume.		

Date	Quantitative Restrictions	Sale of Rice to Government	Export Promotion	Miscellany
24 April-31 May 1962		Only exporters who sells to Department of Foreign Trade what it requires will be permitted to export and they have to export to regular markets.		
15 May 1962				Exporters must show L/C in order to obtain license. Traders must declare stocks.
13 July 1962	Relaxation of restrictions.			
7 December 1962	Abolition of restrictions.	Abolition of requirement.		
15 December 1962				
23 January 1963				Re-grading.
21 February 1963				Elimination of L/C requirement for those exporting less than 50 tons.
10 June 1963	Restrictions on sale of white and cargo rice sales to non-regular markets.			
26 January 1965				Traders exporting more than 25 tons must show L/C.
13 Sept.-Oct. 1965	No license issued for shipments in excess of 1,000 tons.			
1 November 1965	Previous restrictions lifted.			
8 April 1966	Sales in excess of 1,000 tons must get prior approval.			
14 July 1966	All export sales except to Malaysia and Singapore must get prior approval.			
3 August 1966		Reintroduction of reserve requirement, 10% of export volume being required.		
1 September 1966	Relaxation of restrictions on brokens and 35%			
12 October 1966		Increase reserve ratio to 15%.		
7 November 1966	Export ban.			
6 December 1966	Parboiled and brokens may be exported to regular markets.			
January 1967	Export target of 1.5 mn. tons, 900,000 tons being exported in the first six months.			

Date	Quantitative Restrictions	Sale of Rice to Government	Export Promotion	Miscellany
13 January 1967	Exports permitted for all rice up to 3% of volume exported by the firm during Jan.-Oct. 1966.			
1 March 1967		Rice reserve ratio 10%.		
22 April 1967	Exports greater than 500 tons must get prior approval.			
2 May 1967		Changes in grades, used for rice reserves.		
16 June 1967				Exporters must show L/C to obtain license.
8 September 1967	Export target reduced to 1.3 mn. tons.			
15 December 1967	Exports of brokens permitted up to 20,000 tons.			
3 February 1968	Export quota for February and March set at 80,000 tons per month.			
8 March 1968		Rice reserve ratio reduced from 10% to 5%.		
30 March 1968	Export quota for April-May set at 250,000 tons for both months.			
June 1968	Restrictions lifted.	Reserve ratio eliminated.		
17 April 1969			Premium reduction made retroactive for 30 days.	
24 May 1969	Unlimited exports permitted for (Laos) (to reduce glutinous rice stocks)			
24 June 1969				Special rebates on premium for any single shipment of brokens greater than 2,000 tons. Premium reduced from 800 to 500 baht in such cases.
5 August 1969				Special rebates extended to other grades of rice.
10 September 1969				No minimum quantity required for rebates.
8 Mar.-Sept. 1970				Free exports of glutinous rice to Laos (no license, no premium).

Date	Quantitative Restrictions	Sale of Rice to Government	Export Promotion	Miscellany
11 March 1970			Export bounties to successful exporters.	
12 May 1970			Bounties regulations further relaxed.	
21 June 1970			Bank of Thailand provided export credits on easier terms.	
7 April 1971			Ministry of Commerce permitted by Cabinet decision to sell directly to private buyers overseas.	
11 May 1971			Director-General of Foreign Trade Department assigned to negotiate with Japan to buy rice from Thailand to aid Indonesia.	
25 May 1971			Barter Trade involving rice permitted.	
21 June 1971			Credit exceeding 180 day permitted for sales of rice of lower grade than 10% rice.	
29 December 1971			Minister of Finance empowered to borrow 1 billion baht from Bank of Thailand to sell rice on credit.	
11 August 1972	Exports of glutinous rice no longer permitted.			
18 August 1972	Offers of rice sales in excess of 2,000 tons must get prior approval.	5% reserve ratio introduced.		
21 August 1972		Reserve ratio increased to 15%.		
28 August 1972				
18 September 1972		Reserve requirement temporarily suspended.		
26 September 1972	Rice exports between 16 September-31 December not to exceed 70,000 tons except in case of prior commitments.			Internal trade zones established to prevent smuggling.

Date	Quantitative Restrictions	Sale of Rice to Government	Export Promotion	Miscellany
10 November 1972		Reserve ratio 10%.		
4 January 1973	Export sales in excess of 300 tons must have prior approval.			
15 January 1973	No export for rice sales concluded after this date will be permitted.			
5 March 1973		Reserve ratio 25%.		
1 April 1973		Reserve ratio 50%.		
1 June 1973		Reserve ratio 100%.		
12 June 1973	Complete export ban.			
31 July 1973	Export permitted with tightened up regulations on rice reserve ratios.		Retroactive feature of premium reductions eliminated.	
3 August 1973		Rice reserve ratio 200%.		
21 August 1973				Barter of rice for newsprint permitted with Bangladesh.

APPENDIX B

DATA ON LOSSES FROM RICE RESERVES

Mandatory sale to government of a certain proportion of rice (expressed in tonnage terms) is sometimes a condition for the obtaining of export license from the Ministry of Commerce. The following are the data on these mandatory sales.

To establish the terminology, let us state the various steps. To export 1 ton of rice of *any* grade, the exporter must sell to the government x ton (s) of specified grades of rice, the ratio between x tons sold to the government and 1 ton of rice exported being known as the "rice reserve ratio." The various types of rice are paid for at prices fixed by the government which will be called the "reserve-rice prices." These are generally lower than the wholesale prices for similar grades of rice. Consequently exports are in effect taxed to the extent of the losses suffered in the necessity of buying the rice at the higher market prices and selling it to the government at lower reserve-rice prices. These will be called "losses on rice reserves" These losses do not vary with the grades of rice exported. It will vary when (a) the government changes the ratio or the grades of rice required, or (b) when market prices change.

Table B.1 summarises the changes in government policy on rice reserve ratio.

There are some missing data in this table concerning grade mix and prices paid for specific grades. These are essential if an accurate calculation of losses on rice reserves are to be calculated by comparing the reserve rice prices against market prices. However, if one is willing to assume that adjacent grade mix and prices apply to the periods when data are missing, we can obtain good approximations on the losses on rice reserves sustained per ton exported. These are good approximations because changes in grade mix do not affect the losses very much and the reserve-rice prices do not vary much.

Table B.2 gives the losses on rice reserves per ton of rice exported based on such calculations.

TABLE B. 1
Changes in Rice Reserve Ratio.

Date	Rice Reserve Ratio	Mixture of Grades	Reserve Rice Prices
19 Mar. 1962	15%	Unknown.	Unknown.
1 May 1962	15%	Certain (to be announced) proportion of, (a) 10% (b) 1st Grade Special	(a) 155 Baht per 100 Kgs. (b) 142 Baht per 100 Kgs.
1 June 1962	15%	5%	160 Baht per 100 kgs.
15 Oct. 1962	15%	Certain (unknown) proportion of (a) 5% (b) 10%	(a) 167 Baht per 100 Kgs. (b) 162 Baht per 100 Kgs.
1 Jan. 1963		Reserve Requirement Abolished	
3 Aug. 1966	10%	Certain (unknown) proportion of (a) 5% (b) 10%	Unknown
12 Oct. 1966	15%	10% of (a) 5% Broken <i>Plus</i> 5% of (b) 10% Broken	(a) 200 Baht per 100 Kgs. (b) 195 Baht per 100 Kgs.
1 Mar. 1967	10%	(a) 5% Broken (b) 10% Broken (c) 60% Broken (d) 100% (a) greater than 3% (a) + (b) greater than 5% (c) greater than 3% (c) + (d) equal to 5%	(a) and (b) unchanged (c) and (d) unknown.
1 May 1967	10%	7.5% of (a) 5% Broken 2.5% of (b) 10% Broken	(a) 200 Baht per 100 Kgs. (b) 195 Baht per 100 Kgs.
8 Mar. 1968	5%	Unknown	Unknown
1 June 1968		Reserve Requirement Abolished	
18 Aug. 1972	5%	25% Broken	180.33 Baht per 100 Kgs.
21 Aug. 1972	15%	25% Broken	180.33 Baht per 100 Kgs.
18 Sept. 1972	0%	—	—
10 Nov. 1972	10%	5% Broken	180 Baht per 100 Kgs.
29 Jan. 1973	10%	9% of (a) 5% Broken, <i>Plus</i> 1% of (b) 10% Broken	(a) 190 Baht per 100 Kgs. (b) 175 Baht per 100 Kgs.
5 Mar. 1973	25%	10% of (a) 5% Broken 15% of (b) 10% Broken	(a) 200 Baht per 100 Kgs. (b) 190 Baht per 100 Kgs.
1 April 1973	50%	Optional combination of 5 and 10%	Unchanged
1 June 1973	100%	Unchanged	Unchanged
3 Aug. 1973	200%	70% of (a) 5% Broken 70% of (b) 10% Broken 60% of (c) 15% Broken	(a) 200 Baht per 100 Kgs. (b) 190 Baht per 100 Kgs. (c) 180 Baht per 100 Kgs.

TABLE B. 2
Loss on Rice Reserve per Ton of Rice Exported.

Month	Baht/Ton	Month	Baht/Ton
March 1962	17.55 or 22.10 ^a	October 1967	67.70
April 1962	30.00 or 29.55 ^a	November 1967	44.17
May 1962	49.95 or 42.25 ^a	December 1967	32.50
June 1962	43.76	January 1968	20.62
July 1962	55.01	February 1968	14.80
August 1962	57.52	March 1968	3.75 or -2.09 ^b
September 1962	57.52	April 1968	2.09 or -0.41 ^b
1-15 October 1962	62.51	May 1968	0.41 or -2.09 ^b
16-31 October 1962	52.01 or 50.75 ^b	August 1972	4.83
November 1962	47.00 or 40.76 ^b	September 1972	19.46
December 1962	49.50 or 43.25 ^b	October 1972	Abolished
August 1966	20.83 or 20.83 ^b	November 1972	54.17
September 1966	30.83 or 30.83 ^b	December 1972	35.00
October 1966	50.00 or 46.70 ^b	January 1973	29.59
November 1966	88.75	February 1973	70.16
December 1966	79.98	March 1973	148.75
January 1967	8.33	April 1973	375.00 or 320.80 ^b
February 1967	35.02	May 1973	529.10 or 483.30 ^b
March 1967	33.99 ^c	June 1973	1241.70 or 1183.30 ^b
April 1967	29.00 ^c	July 1973	1291.60 or 1091.60 ^b
May 1967	32.92	August 1973	2243.22
June 1967	40.20	September 1973	2423.29
July 1967	48.96	October 1973	2567.25
August 1967	71.25	November 1973	2580.99
September 1967	89.80	December 1973	2283.36

(a) The assumptions are that all reserve rice is to be 10% Broken (for the first figure) or 1st Grade Special (for the second).

(b) The assumptions are that all reserve rice is to be 5% Broken (for the first figure) or 10% Broken (for the second).

(c) The assumption are that the ratios for the various grades are as follows.

- 3% of (a) 5% Broken
- 2% of (b) 10% Broken
- 2% of (c) 60% Broken
- 3% of (d) 100%

Sources: The formula used in this calculation is

$$\sum_i RR_i (MP_i - RP_i)$$

Where RR_i is the rice reserve ratio for grade i (obtainable from Table B.1, third column)

MP_i is the market price for grade i rice (from Department of Internal Trade, Ministry of Commerce).

RP_i is the reserve price for grade i rice (from Table B.1, fourth column).

THAI RICE EXPORTS: AN ANALYSIS OF ITS PERFORMANCE IN THE 1960'S.*

Chaiyawat Wibulswadi

During the second half of the 1960's, Thailand's export earnings appeared to have been sluggish while the balance of payments position which, hitherto, had been comfortable now showed some deterioration. Export problems during this period apparently were due to the poor long-term performance of rice and rubber.^{1/} This paper is an empirical investigation into the performance of rice exports. The emphasis of this analysis is placed upon the structure of markets for Thai rice and the relative influence of two sets of factors, i.e. the external factors which are presumably beyond the control of Thailand and the internal factors which can be affected by appropriate domestic policies. In particular, it will be contended that domestic policies had a positive impact on the poor export performance of rice during the period under investigation.

In Section 1, long-term pattern of Thai rice exports will be discussed. Sections 2 and 3 describe the mixture of factors which could have influenced the export performance of Thai rice. The observed pattern is then fully evaluated in the remaining sections.

I. LONG-TERM EXPORT PERFORMANCE OF THAI RICE

The performance of Thai rice exports may be judged from the behaviour of Thailand's share in the total world trade of rice. As long as Thailand can at least maintain her existing world share, her rice export performance will be considered satisfactory.^{2/} The justification is that Thailand would then have taken full advantage of the market opportunities regardless of the external demand conditions which are, presumably, reflected in the total volume of rice trade. The failure to maintain the existing share of the world market, on the other hand, could legitimately be attributed to internal rather than external constraints to export growth.

* This paper is based on Chapter 4 of my doctoral dissertation, "Thailand: A Case Study in Open Approach to Foreign Trade," M.I.T. September 1973. I would like to express my gratitude to Professors Jagdish Bhagwati and Charles Kindleberger for their helpful comments on the thesis version. Any errors appear in this paper are solely my responsibility.

^{1/} This is clearly seen by comparing the dynamic changes of exports and GNP.

— — — as % of GNP	1954-56	1959-61	1964-66	1968-70
Rice	7.7	5.4	4.9	2.4
Rubber	3.7	4.3	2.3	1.6
Other exports	6.1	6.2	7.6	6.9
Total exports	17.5	15.9	14.8	10.9

Source: Calculated from data in Bank of Thailand, *Monthly Bulletin*.

^{2/} The underlying concept is a theory of oligopolistic behaviour. As the world rice trade is dominated by only a few major exporters, the market is characterized by an oligopolistic structure. Consequently, the scope for expansion of the market share for any major exporter is limited, and the optimal strategy for every supplier is to protect its existing share. For detailed discussion of the concept, see Singh (1964).

TABLE I
Rice Exports; Thai Rice, World Total, and World Shares of Major Exporters, 1957-70

	1948-52	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
1) Shares of Major Exporters (%)															
Thailand	28.2	27.8	22.7	22.4	21.2	24.5	20.6	20.2	25.6	24.1	20.4	21.0	16.6	14.8	14.6
Burma	26.8	31.0	28.0	31.8	30.8	25.1	27.4	24.0	18.8	17.3	15.4	7.6	5.5	7.8	8.7
U.S.A.	11.7	13.0	11.3	14.1	15.6	13.2	17.0	17.1	17.9	19.9	18.3	26.1	29.5	27.9	23.6
China	n.a.	n.a.	n.a.	n.a.	n.a.	5.1	9.4	9.1	10.9	9.6	15.1	16.3	13.7	12.3	12.6
U.A.R.	5.2	4.5	7.2	1.0	5.0	3.1	2.3	5.4	7.1	4.2	4.7	6.2	8.9	11.2	8.9
2) Absolute Volume of Exports (thousand tons)															
World Total		5649	5036	4865	5673	6334	6157	7015	7418	7803	7380	7068	6430	6874	7347
Thailand		1570	1128	1079	1193	1551	1271	1418	1896	1883	1509	1482	1068	1022	1084
3) Value of Exports															
World Total (\$ million)					740	701	764	863	923	997	1007	1131	1127	1215	1123
Thailand's Share (%)					16.5	24.4	20.3	18.8	22.8	21.0	19.1	19.7	16.1	11.4	10.7

Sources: FAO, *Trade Yearbook*, 1961, 1966, 1971. Rome.

TABLE II

Market Structure of Thai Rice Exports, Selected Years (percentage share of total volume).

	1959-61	1963-65	1967-69
Regional Markets			
1. Hong Kong	13.9	11.5	14.5
2. Malaysia	16.0	15.8	15.3
3. Singapore	19.5	11.1	10.7
4. Saudi Arabia	6.2	2.7	5.6
5. Indonesia	15.2	17.3	8.5
6. Japan	6.1	7.4	8.3
Total Six Markets	76.8	65.8	62.9
Major New Markets			
7. Ceylon	1.4	4.8	5.1
8. India	—	4.8	14.2
Total 8 Markets	78.2	75.4	82.2

Source: Calculated from data in Bank of Thailand, *Monthly Bulletin*.

Table 1 presents data on Thai rice exports and the shares of the major exporters in total world trade in rice from 1957 to 1970. Thailand's share clearly displays a declining trend. In 1962, its magnitude dropped to a new low level and (with the exception of the years 1964 and 1965 when Burma began to withdraw from active competition) it never again reached the average level of the previous period. This turning point interestingly coincides with the beginning of an upward trend in the world shares of the U.S. and China. Without an investigation into the market structure, it is, of course, premature to conclude that the share in world exports lost by Burma, and to a lesser extent by Thailand, has been fully captured by the U.S. and China. It is, however, evident that the low and declining level of Thai rice exports in the 1960's cannot be attributed solely to stagnating world demand for rice imports. Rather, Thailand's failure to fully exploit existing market opportunities, especially with the withdrawal of Burma her most important competitor, is evident. This failure to maintain her world share apparently resulted in a substantial loss of potential export earnings.^{3/}

The world-share approach which is used above to evaluate the export performance implicitly assumes that markets are homogeneous. World trade in rice, however, is characterized by several regional markets. Some markets may exhibit stronger ties to one source of supply than others, due to differences in transportation costs, the quality of rice, contractual obligations, etc. A more complete analysis should therefore take the market structure into consideration. Since this type of analysis has been fully discussed elsewhere by the author (Wibulswasdi 1972), only a brief summary of its content will be presented here.

^{3/} In this study, the world share is treated exclusively in terms of volume. The trend of value share, however, parallels that of volume share (See Table 1).

By using the constant-market-share approach, the change in Thailand's share of world exports over two points of time can be partitioned into four components. Two components (The "regional market" and the "new market" components) are related to the types of markets for Thai rice, while the others (the "share" and the "interaction" components) to the behaviour of Thailand's share in the regional markets. Thus, direction of change in Thailand's share of world exports may be described as the net result of various effects.^{4/} The "regional market effect" indicates whether or not the aggregate import demand in all of Thailand's major markets grows at the same pace as that of the world demand as a whole. This factor is largely beyond Thailand's control.^{5/} Should Thailand unfortunately get "tied up" with relatively sluggish regional markets, Thailand would need to improve her shares in these regional markets (the "share effect") and/or exploit the new market opportunities (the "new market effect") in order to maintain her world share. These two development, however, would depend more upon internal factors than upon external ones. The signs of these partitioned components can be reproduced as follows:

Components	Periods of Comparison	
	1959-61 and 1963-65	1963-65 and 1967-69
1. Regional markets	negative	negative
2. New markets	positive	negative
3. Share	positive*	negative
4. Interaction	negative	positive*

*the magnitude of this component, relative to those of other components, is negligible.

It is easily seen that during the period under investigation, stagnating regional market conditions have exerted adverse effects on Thailand's export performance. The "share effect" suggests, however, that by not being able to improve her competitive position in these markets, Thailand also failed to counterbalance the unfavourable external condition. The "new market" component, on the other hand, indicates that a successful performance with respect to minor markets was registered only during the mid-1960's. In short, both external and internal factors combined to produce a poor performance over the period of the 1960's.

Our next task is to relate this statistical description of the situation to the contributory factors. Before assessing the overall performance we shall, however, review some micro aspects of both international trade in rice and of Thai exports.

4/ This argument is represented by the following mathematical expression:

$$\Delta S_w = \frac{1}{X^1_w} \left[\underbrace{\left(\sum_j S_j^0 \Delta M_j - S_w^0 \Delta X_w \right)}_{\text{(Regional Market)}} + \underbrace{\sum_j \Delta S_j M_j^0}_{\text{(Share)}} + \underbrace{\sum_j \Delta S_j \Delta M_j}_{\text{(Interaction)}} + \underbrace{\Delta X_m}_{\text{(New Market)}} \right]$$

Where S_w = Thailand's share in world rice exports

X_w = Volume of total world rice exports

X_j , X_m = Volume of rice exported from Thailand to j^{th} major market and other minor markets, respectively

$S_j = \frac{X_j}{M_j}$ = Share of Thai rice in the total import volume of the j^{th} market

and the postscripts 0 and 1 represent initial and later points of time, respectively.

5/ However, it may not be "purely" an external factor. Shrinking demand in regional markets could be partially induced by the past pricing-policies of major suppliers.

II. FACTORS AFFECTING THE EXPORT PERFORMANCE

Two types of factors will be separated: external factors, which are presumably beyond the control of Thailand, and domestic policies in Thailand.

A. Domestic Policies in Thailand

The Thai Government has been using three measures in regard to rice exports:

1) *The Rice Premium*: Rice exports are subjected to two kinds of taxes: an ordinary export duty and a special tax called the "rice premium". The range of export duty, depending upon the grade of rice, has been between 3 and 7 per cent of the average export price. On the other hand, the average rate of premium, based on the ratio of the total premium to the value of exports, has ranged from 25 to 35 per cent. The rice premium system was established in 1955, presumably to replace the profits previously obtained from the multiple exchange-rate system and from state trading in rice.^{6/} The contribution of the total premium to government revenue has been declining but remains substantial, accounting for approximately 15% of total revenue during the late 1950's and around 10% during the sixties. The rice premium has also been used to prevent an excessive increase in the domestic price of rice when there is a marked rise in the world price.^{7/}

2) *Export Licensing*: Export licensing is primarily an administrative tool for the collection of the premium. It can also be used as an export control device. For the purpose of effective export control, a combination of the export quota and an increase in the premium rate has been used three times since 1955—in 1958, 1962, and from November 1966 to May 1968.

3) *The Government-to-Government Sales*: In several importing countries, foreign trade in rice is conducted only through bilateral agreements with governments of the exporting countries. Government sales, therefore, have become an essential part of the rice export system in Thailand as evident from the figures in Table 3.

TABLE III

Percentage Share of Government Sales in Thailand's Total Rice Exports. 1960-1970.

1954-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
12.4	27.3	35.1	32.3	41.6	43.3	37.8	46.6	45.1	35.2	33.1	33.3

Source: Calculated from unpublished figures made available by Department of Foreign Trade, Ministry of Economic Affairs.

Under normal conditions, government sales, by supplementing private sales, presumably benefit the overall export performance. The rice premium is also used as

^{6/} The transition toward the rice premium system is described more fully in Corden (1967).

^{7/} The explicit statement of the government objectives in regard to the use of the premium reads as follows:

1. to serve as an instrument to regulate the flow of rice exports and to stabilize domestic price of rice
2. to serve as an instrument to keep Thai rice competitive with rice of competing countries.
3. to make it possible to sell rice on a government-to-government basis
4. to be a source of government revenue.

(Ministry of Economic Affairs, 1970, p. 29)

an instrument for the procurement of rice for government contracts, i.e. by charging lower premiums on government-contracted rice than on privately exported rice. However, when the exportable surplus becomes limited, government sales can hamper the normal flow of private trade. In fact, some mild controls were imposed on private trade in certain months in 1960, 1963, and 1966 in order to ensure sufficient supplies for government contracts.

B. External Factors

Thailand's falling share in total world exports of rice could also be attributed to two types of developments in other countries: the shrinkage of regional markets and an increase in competition from other major exporters.

1) *Demand Conditions in the Regional Markets:* The improvement in productive capacity associated with the "Green Revolution" in the mid-1960's has led to a reduction of the import need in some importing countries. In addition, several of these countries have always stated as their goal the attainment of self-sufficiency in rice. This demand trend may generally be regarded as beyond the control of Thailand. There is however a distinct possibility that it may have been partly induced by past pricing policies of Thailand or other major exporters. When analysing the demand trends of major regional markets for Thai rice (see Appendix), we shall explore this possibility.

2) *The Competitiveness of Other Major Exporters:* We have seen earlier that during the sixties Burma lost her position as the leading exporter while the U.S. and China substantially improved their shares of the world market. Supply conditions and policies in regard to rice trade in these countries will now be reviewed.

a. Burma

The turning point in Burma's export performance was the year 1963 when the Government took over the entire rice trading system. The Government, however, was able to obtain only a limited supply of paddy from the farmers because of the low fixed prices offered by the Government and the disorganization of the marketing system in general. A poor cropping season due to a flood in 1964 further multiplied the problems. The low level of supply forced the Government to hold back export to prevent domestic shortage. The period of limited export activities in Burma continued throughout the second half of the 1960's.

b. The U.S.

Under the system of price supports and acreage allotments for the production of rice, the U.S. has been accumulating an increasing volume of excess supply. Rice exports from the U.S. are influenced by two major measures: concessional sales (mostly under the PL 480 program) and commercial export subsidies. The latter measure aims at preserving the share of world market for U.S. exports.

c. China

The rice export programme in China is supported by a wheat import programme; both of which are under government control. China began to compete directly against other traditional exporters only in the early 1960's after a complete halt in her trade with the USSR and the Eastern Europeans which normally provided the outlets for half of China's total exports of rice.

III. OTHER FEATURES OF THE WORLD TRADE IN RICE

A. Trading Systems

Private trade accounts for only half of total world trade while the rest is conducted through government bilateral contracts. The two types of trade are different in two major aspects: 1) the extent of government participation and 2) the nature of the competitive factors. For Government-to-Government sales non-price factors, such as the diplomatic relationship between the trading countries, could be an important determinant of the trade flow. Moreover, there is an indication that price movements in these two types of sales do not necessarily follow each other. For example, the price index of the bilateral contracts for 1960–1968 shows a steady upward trend while the index for private trade fluctuates throughout the corresponding period.^{8/}

B. Internal Supply Conditions of the Importing Countries

The importing countries may be divided into the non-producing countries (including the case where domestic production is negligible) and the deficit producers. Such a distinction is useful for identifying the factors underlying the trend in demand for imports.

C. Product Differentiation

1) *Varieties*: Between 75 to 80 per cent of total world trade involves long grain rice. The remainder is in the round grain variety. Due to strong consumer preference, the markets for these two varieties are largely separated.^{9/} Since Thailand produces only long grain rice, trade in the round grain variety is of minor importance to our analysis.

2) *Qualities*: The traded rice can be further classified by the differences in the qualities or types of processing (as summarized in The Appendix). We shall note only the distinction between high and low quality rice. Discussions in various issues of *FAO Rice Report* seem to indicate that the demand for low quality rice is more price elastic than that of high quality rice, and that in some markets the cross elasticity between the two types of rice is significant. The exact magnitude of these elasticities, however, are not known.

IV. A MORE DISAGGREGATED VIEW OF THE EXPORT PERFORMANCE OF THAI RICE

In Table 4, the major markets for Thai exports are cross-classified according to the characteristics noted in the last section. The analysis of the demand trend and the performance of Thai rice in each market is presented in The Appendix. Based on this micro-analysis we can supplement our aggregated view of the falling share of Thailand's exports with the following observations.

1) The decline of the combined import demands in the regional markets for Thai rice during the sixties can be attributed to a combination of economic and

^{8/} The relevant price indices (taking 1957–59 as 100) are:

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
private trade	92	83	93	108	103	100	99	119	149	142	121
bilateral contracts	99	95	97	98	104	109	112	118	132	153	139

Source: FAO, *Rice Report*.

^{9/} Some major markets for Thai rice (Japan, Indonesia, and India), however, import both varieties of rice. Ridler and Yandle (1972, p. 60) explain that in these countries the governments' purchasing policies determine the type of rice to supply to the market, and thus override consumer preference.

political developments in these countries. A major factor is the successful implementation of the domestic production programs in the producing countries—most notably in Japan. The drive toward self-sufficiency in rice in these countries appears to have been induced by nationalistic considerations and the instability of foreign supply rather than by the long-run price trend. Another important factor was the political situation in Indonesia around the mid 1960's which led to a temporary import ban during 1965–67 and, moreover, the decline in entrepot trade (and consequently the import demand) in Singapore. The negative regional market effect of our earlier decomposition exercise, therefore, has to be considered as largely beyond the control of Thailand.

2) The new market component can be largely explained by the flow of Thai exports into India and Ceylon. Thailand managed to penetrate both markets simply because Burma was forced by supply shortage to forgo a portion of her existing market. The termination of the U.S. PL 480 program in India after the mid 1960's also provided an extra market opportunity for Thailand. The volume of the Thai exports to these new markets, however, was substantial only during 1965–68. In the late 1960's Burma was just beginning to recapture her lost shares. The other major suppliers (China in the Ceylon market and UAR in the India market), on the other hand, have been improving their market shares since 1965. The failure of Thailand to secure a firm position in these new markets, once having been allowed entry, must therefore be partly attributed to domestic factors in Thailand.

3) When we cross-classify the regional markets by the trading system and the quality of rice, the behaviour of Thailand's shares in these markets displays a contrasting pattern.

i) In the two large commercial markets, Hong Kong and Singapore, the trend of Thai exports is steady despite strong competition from China. The stability of Thailand's market share appears to be the outcome of a combination of factors; consumer preference for the high quality of Thai rice, the connection between the traders

TABLE IV
Salient Features of Major Importers of Thai Rice

Market	Trade System ^{1/}	Supply Condition ^{2/}	Type of Thai Rice ^{3/}	Other Major Suppliers	Special Feature of the Trading System.
1. Hong Kong	P	NP	H/M	China	Import quota system.
2. Singapore	P	NP	H	Burma, China	Entrepot trade.
3. Malaysia	P	D	H/B/P	Burma, China	
4. Saudi Arabia	P	NP	P	U.S.	
5. Indonesia	G	D	L	China, U.S.	U.S. trade under PL 480.
6. Japan	G	D*	B/G	Burma, China, Taiwan, U.S.	Mainly importation of round grain rice.
7. Ceylon	G	D	P	Burma, China	China trade under barter agreement.
8. India	G	D	L/P	Burma, U.S. U.A.R.	U.S. trade under PL 480.

Notes: ^{1/} P—private trade, G—government monopoly

^{2/} NP—nonproducing country, D—deficit producer, D*—Japan becomes surplus producer since 1969

^{3/} H,M,L—grades of white rice (high, medium, low), B—broken rice, P—parboiled, G—glutinous

of Chinese origin in Thailand and in the importing countries, and, particularly in the case of Hong Kong, the import quota system. There is, however, a strong correlation between the temporary loss of Thailand's market share and the periodic imposition of export control in Thailand.

ii) Trading in other regional markets, on the other hand, involves rice of lower quality. These markets are generally competitive because of the availability of alternative sources of supply. Government sales to Indonesia, moreover, have to face the additional problem of competing against U.S. concessional sales. In these markets Thailand has not been able to maintain her market shares, especially in the late 1960's.

V. AN EVALUATION OF DOMESTIC POLICIES IN THAILAND

The influences of government measures on the performance of Thailand's rice exports can now be assessed.

1) The role of export control in inhibiting exports is apparent. In every instance of effective export control (in the years 1958, 1963, and 1966-68) Thailand's share in world rice exports fell from the level of the previous year by 4 to 5 percentage points. These occasional controls also create uncertainty in trading activities and thus could have contributed to the long-term declining trend in Thailand's share.

2) To answer the question of whether the rice premium has adversely influenced export performance, we shall consider the long-run patterns of the demand for and the supply of Thai rice.

i) The existence of the premium can be justified from the trade objective only if foreign demand for Thai rice is inelastic. This is the well known argument for the optimal tariff. The micro-analysis of the major markets of Thai rice seems to suggest that Thailand has certain monopolistic power with respect to the commercial sales to Hong Kong and Singapore. This generalization, however, may not be made for *all* markets. From earlier observations on the improvement in the productive capacity in some importing countries and the oligopolistic drive of the U.S. and China to improve the market share, it appears that the demand curve facing Thailand has gradually become more elastic during the past decade. The reluctance of the Thai Government to reduce the premium rate could have adversely affected the price competitiveness of Thai rice in the late 1960's.^{10/} Unfortunately, we are not able to present concrete evidence of the importance of the price factor because of a lack of meaningful price comparisons. Our contention is nevertheless consistent with the decline in the share of Thai rice in the markets for low quality rice. In fact, as brought out in Table 5, during the period 1969-70 the carryover stocks in Thailand, i.e. old crops available for exportation, began to pile up after having been negligible in the earlier years.

ii) The existence of the premium has depressed the price of paddy received by farmers, and thus, in the long run, could have inhibited the rice supply from growing more rapidly. In his study of supply responses of Thai crops, Behrman (1968) finds significant, although generally inelastic, price responses across *changwads* (provinces) for rice. The magnitudes of the price elasticities tend to be larger for those *changwads* in which alternative crops may be profitably produced. The long run elasticities of areas planted with rice with respect to prices across 50 *changwads* in the northeast and the

^{10/} In 1971 Malaysia, a regular buyer of Thai parboiled rice, even had to request the Thai government to abolish the premium on the parboiled rice. (Bank of Thailand, *Monthly Bulletin*, June 1971, p. 7). To avoid losing the market, the Thai government honoured this "request".

central part of the country range from 0.0 to 3.12 with the mean of 0.31. With regard to the impact of the premium, Behrman observes:

“...In light of these results, the maintenance of domestic rice prices below the world price by the collection of the rice premium (export tax) probably has lessened the production of rice and increased agricultural diversification in these *changwads* in which the cultivation of alternative crops has been economically possible.”

(p. 312)

On the other hand, total domestic consumption of rice, the main staple food in Thailand, has been growing steadily. During the sixties (with the exception of a temporary export boom in 1964–66), domestic consumption rose faster than exports. As Table 6 brings out, the falling percentage of output that was exported may be taken as an indication that the level of exportable surplus has not been able to grow more rapidly because of production limitation and the government’s overriding concern for the domestic availability of rice.^{11/} On the other hand, there is some evidence that the existing level of exportable surplus in Thailand during the second half of the 1960’s may have hampered the expansion of exports into some nontraditional markets. In 1967, for example, when Ceylon tried to obtain rice from Thailand to compensate for the shortage of supply from Burma, Thailand could provide only a small quantity because of her limited supply.^{12/}

iii) To sum up, we have argued that the existence of the rice premium system in Thailand seems to have affected export performance adversely through the long-run negative production effect and, in the late 1960’s, also through the negative price competitive effect.^{13/}

3) The poor export performance in the late 1960’s can also be attributed to the failure of the Thai Government to sell more rice through government contracts. From Table 3, it is seen that while accounting for an average of 45% in 1966–67, the share of the government sales in the total exports fell to 33% in 1969–70. As shown in Table 5, these latter years were the period when Thailand built up substantial carryover stocks which signify the failure to find outlets for exportable surplus. It is true that a portion of the potential markets which were lost to noncommercial forms of trade, e.g. the Indonesia market, should be considered as beyond the control of Thailand. The Thai Government nevertheless had hardly tried to make its sale conditions more attractive to prospective customers. In fact, the government agreed to sell rice on long term credit for the first time only in 1971.^{14/}

^{11/} The ratio of domestic consumption to total output, of course, moves in the opposite direction from the export-output ratio. Actual domestic consumption figures, however, are not available. When estimation of domestic demand is needed, it is normally based upon the rate of growth of population and an assumption of constant per capita consumption. See, for example, the estimated rice balance sheet for 1958–68 presented in Ingram (1971, Table XXIII, p. 242).

^{12/} The incident is reported in FAO, *Rice Report*, 1967, p. 19.

^{13/} Our view is consistent with the observation made by Ridler and Yandle (1972, p. 58) that the problem of Thai exports in the 1960’s was the supply lag problem and beginning in 1969 it was the inability to compete with other exporters.

^{14/} Another important development in 1971 was a temporary abolition of the premium on low grade rice. The two measures led to total exports of 1.5 million tons for that year as contrasted to the average for 1966–70 of only 1.2 million tons.

TABLE V
Carry Over Stocks of Rice in Thailand, 1960-1970. (in thousand tons)

1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
150	—	—	—	—	—	40	—	61	212	350

Source: FAO, *Rice Report*, annual. Rome.

TABLE VI
Ratio of Rice Exports to Paddy Production in Thailand, 1960-1970 (percentages)

1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
17.8	20.1	15.5	15.2	18.9	19.8	16.3	12.4	11.1	9.5 (12.9)	8.0 (10.6)

Sources: Export figures—Bank of Thailand, *Monthly Bulletin*. Paddy production estimates—Ministry of Agriculture, *Agricultural Statistics of Thailand*, annual.

Notes: 1) Adjustment is already made for the time lag between the production and the distribution periods.
2) The figures in the parentheses for 1969-70 are based on the assumption that the carry over stocks were exported.

VI. CONCLUDING REMARKS

We have argued that poor export performance of Thai rice during the sixties appears to have been due to some extent to the domestic policies in Thailand. This experience is by no means unique. The adverse impact of export control and export taxes on the export performance of other countries during the earlier periods have been well analyzed; for example, by Leff (1967) for the case of Brazil during 1947-1962, and by Bhagwati and Desai (1970) and Singh (1964) for the case of India during 1951-1960. With respect to the Thai experience, an interesting question is whether the authorities imposing the measures on the rice trade were aware that these measures could adversely affect Thailand's exports.

1) It appears that occasionally there has been apparent conflict between the domestic consumption objective and the export objective. When imposing effective control on exports for the purpose of ensuring domestic availability, the government undoubtedly must be willing to sacrifice part of the exports.

2) On the other hand, the impact of the premium on exports has rarely been questioned despite the fact that the system of rice premiums has been widely discussed in Thailand.^{15/} The government, however, has been extremely reluctant to relax the premium measure.^{16/} Discussing the problem of Thai rice recently, a prominent trade official

^{15/} This is because the controversy has always centered around three other issues—equity, allocative and incentive effects, and development strategy. Debates on these issues have already been summarized rather lengthily in Ingram (1971, pp. 244-261).

^{16/} A relaxation of the premium measure did not materialize until the late 1960's. In November 1968 when the rice export level was noticeably low, the government decided to reduce the premium rates on some selected grades of rice. The downward adjustment of the premium rate was repeated in 1969 and again in 1971. The premium on all but the high grade rice was finally abolished in April 1971. It was, however, re-imposed in September 1972 in response to increases in both export and domestic prices.

argued that a reduction of the premium rate would only reduce the export price, thereby benefiting the importers while hurting Thailand's exchange earnings, and that the increase in the volume of exports had to be attributed to an exogenous increase in demand and not the reduction of the premium.^{17/} The above statement seems to indicate an excessive preoccupation with the short-term benefits arising from the imposition of the premium and a disregard for the possible long-term consequences. However, the premium system could have been carried over for political or revenue purposes while the trade objective is only secondary. The authorities, nevertheless, seem to believe that the measure does not have a negative impact on exports. The Ministry of Economic Affairs (1970), for example, even stated that the premium "serve as an instrument to keep Thai rice competitive with rice of competing countries" (p. 29)! In the final analysis, the authorities seem to be merely rationalizing the imposition of the premium because it is impossible to use this single instrument to fulfill simultaneously several seemingly conflicting stated objectives.

3) It is true that there were no unlimited opportunities for Thailand to increase her rice exports. The Thai authorities however, appear to be unconcerned with Thailand's share in the world rice exports. This lack of sufficient competitive drive has inevitably led to a substantial loss of Thailand's share to its more active competitors.

References

1. J.R. Behrman, *Supply Response in Underdeveloped Agriculture: A Case Study of Four Major Annual Crops in Thailand, 1937-1963*. Amsterdam, North-Holland Publishing Company, 1968.
2. J.N. Bhagwati and P. Desai, *India: Planning for Industrialization*, Oxford University Press, 1970
3. W. Corden, "The Exchange Rate System and the Taxation of Trade," in T.H. Silcock, ed., *Thailand: Social, Economic Studies in Development*, Canberra, Australia, 1967.
4. Food and Agriculture Organization of the United Nations, *National Rice Policies*, (1965, 1970) Rome.
5. ———, *FAO Rice Report*, annual (1963-70) Rome.
6. J.C. Ingram, *Economic Change in Thailand 1850-1970*, Oxford University Press, 1971.
7. N. Leff, "Export Stagnation and Autarkic Development in Brazil, 1947-62," *Quarterly Journal of Economics*, May 1967.
8. Ministry of Economic Affairs, *The 51st. Year of Ministry of Economic Affairs*, Bangkok, 1970.
9. D. Ridler and C.A. Yandle, "Changes in Pattern and Policies in the International Trade in Rice," *IMF Staff Papers*, March 1972.
10. Manmohan Singh, *India's Export Trends*, Oxford, Clarendon Press, 1964.
11. Somporn Thepsithar, "Problems of Thai Rice in Long Run," *Ratapirak*, Bangkok, April 1972 (In Thai Language).
12. Chaiyawat Wibulswasdi, "Export Performance of Thai Rice 1959-69: A Preliminary Analysis," *Thai Economic Review*, September 1972.

^{17/} (Thepsithar, 1972, pp, 68-69).

APPENDIX

I. CLASSIFICATION OF RICE

The grade of *white rice*—high, medium, or low—depends on the percentage of broken kernels. *Broken rice* is imported for mixing with higher grade before retailing, or for use as raw material in the food processing industry. *Parboiled rice* has a distinctive colour as well as nutritional value. It is preferred by consumers in India, Arabian markets and Malaysia. *Glutinous rice* (sticky rice) is traded in only a limited number of markets.

Most of the international trade statistics, however, classify the traded rice according to the types of processing, mainly into *milled* and *husked* rice. Husked ("brown") rice is imported mainly for the milling industry and accounts for only a minor portion of world trade.

II. SOURCES OF DATA

1) *FAO Trade Yearbook* (annual, Rome) gives the figures on total imports and exports of every country. The continued readjustment of the figures on the world total creates some problems in calculating a country's share in world trade. For major exporters, however, we are more interested in the relative trend than in the exact magnitude of their shares. On the other hand, we evaluate the demand trend in the importing country on the basis of the absolute value of imports as well as the share of the world market.

2) The breakdown of foreign supply for each importing country is assembled from the following publications:

- i) FAO, *The World Rice Economy in Figures 1939-1963*, Rome, 1966.
- ii) UN, *Foreign Trade Statistics of Asia and the Far East*, Series A, Annual, New York.
- iii) UN, *Commodity Trade Statistics*, Series D, Annual, New York.

3) When the detailed breakdown of the sources of foreign supply is not available, the Thai share in the importing market is calculated as the ratio of Thailand's exports (from the national source) to the total imports of that country. Because the trade flow as recorded by the trading partners often shows discrepancies, the computed share should be considered as approximation only.

III. A MICRO-ANALYSIS OF THE MAJOR MARKETS FOR THAI RICE

Four cases (Hong Kong, Singapore, Indonesia, and Japan) will be discussed in detail. Due to a lack of detailed information, we present only the available figures on the other four markets.

A. Hong Kong (See also Table A-I)

1) *The Demand Trend*: Since domestic production in Hong Kong is negligible, her import demand is determined by the consumption requirement.^{1/} The volume of rice imports rose steadily from 1957 to the mid-1960's but began to fluctuate somewhat thereafter. In terms of the share in total world imports, its fluctuation is within the

^{1/} Entrepot trade in rice is limited. The percentage of total imports that were re-exported declined from about 10% in 1961-63 to only 5% in 1967-69

range of 4.7 to 6.5 per cent (with the sole exception of the year 1962) without a significant upward or downward trend.

2) *The Market Environment*: Thailand and China have always been the two major suppliers, accounting respectively for 50% and 30% of the total imports. Under a quota system for rice imports, each of the registered importers is allocated a share of the quarterly quota. The authorities, however, have the power to control the sources of supply as well. Judging from the rigidity of the trade structure, it appears that the scope for either Thailand or China to substantially improve her market position is rather limited. In general, prices of rice from both countries tend to move together.

3) *The Performance of Thai Rice*: The performance of Thai rice presumably depends on the stability of the flow of supply. Since 1958 the share of Thai rice in the Hong Kong market has fluctuated narrowly around the 50% level. It is interesting to note the direct impact of Thailand's export control measures on the behaviour of her market share. After the restrictive control in 1958, for example, the Thai share had to settle for a lower "equilibrium" level--around 50% as compared to 65% in 1955-57. The low market share in 1968 also reflects the lagged effect of yet another effective control.

B. Singapore (See also Table A-II)

1) *The Demand Trend*: Since Singapore is a large centre for the entrepot trade in rice, her import demand is determined jointly by the domestic consumption requirement and by re-export activities. The trend of Singapore's rice imports displays a sharp break both in terms of the absolute volume and the share in total world imports in 1964. This turning point can be explained by matching incidents on both the demand and the supply sides. On the demand side it was the complete halt in trade due to political problems between Singapore and Indonesia, the largest customer for Singapore's reexport of rice. Since then Singapore's entrepot trade in rice has markedly declined--the reexports-imports ratio dropped from the 1961-63 average of 53% to the 1967-69 average of only 20%. The loss of the Indonesia outlet and the subsequent reduction of Singapore's import demand, however, coincide with the cutback in Burma's flow of supply to Singapore's market. The remarkably stable trend of Singapore's imports since 1964 reflects the smooth adjustment to a narrower trade pattern.

2) *The Performance of Thai Rice*: In the second half of the 1960's Thailand and China remained the principal suppliers, on the average accounting for half and one-fourth of Singapore's total imports, respectively. The two countries appear to have been the alternative sources of supply. There is, however, no indication of the correlation between relative market shares and price competitiveness.

From the data in the accompanying table, we can see that while Thailand was losing a substantial portion of her market share to China, the price of Chinese rice rose even faster than the price of Thai rice. It was not the case that Thailand had priced herself out of the market, what can then be the plausible explanation? The FAO's rice report has made an observation that commercial trade between Thailand and Singapore was dominated by the close commercial (and often family) connections between the merchants of Chinese origin in Bangkok and in Singapore, as well as by the marked preference which consumers have for Thai white rice.^{2/} The reduction in the flow of supply from Thailand, due to control measures in 1966-68, could have forced some of

^{2/} This observation (FAO, *Rice Report*, 1963, p. 3) also applies to the Hong Kong market.

TABLE:

Relative Behaviour of Thai and Chinese Rice in the Singapore Market, 1965-69.

year	Change in the percentage market share from previous year				Prices (\$/ton)		Price ratio
	Thai		China		Thai	China	Thai/China
1965	-	1.1	+	5.9	131.7	100.8	1.31
1966	-	10.8	+	12.8	158.1	130.3	1.21
1967	-	10.0	+	7.6	186.1	171.1	1.09
1968	+	0.7	-	5.3	191.2	198.0	0.97
1969	+	11.5	-	8.0	173.3	151.8	1.14

Source: Calculated from the basic figures given in UN, *Foreign Trade Statistics of Asia and the Far East*.

the regular importers to tap China as a substitute source of supply. This temporary shift in market distribution, however, returned to the normal pattern soon after the relaxation of the control measures in Thailand. The substitution between Thai and Chinese rice, therefore, was not directly related to the price-differential.

C. *Indonesia* (See also Table A-III)

1) *The Demand Trend*: From 1957 to 1961 Indonesia's imports expanded steadily, both in absolute quantity and in the share of world imports. While the Indonesian Government, like several other deficit producers, aimed to attain a self-sufficiency position, the programme succeeded only in keeping the import volume at a constant level during 1961-64. In August 1964 the Government announced an import ban on rice as part of the overall programme to preserve scarce foreign exchange.^{3/} During 1965-67 the import demand dwindled drastically, representing only the delivery of the previously signed long-term contracts. In terms of the share in total world imports, the 1965-67 average share is only 4% as contrasted to 16% for 1961-64. After the change of government, Indonesia, in 1968, however, reappeared as a major importer of rice.

2) *The Market Environment and the Performance of Thai Rice*: During the late 1950's and the early 1960's the largest and most consistent source of foreign supply for Indonesia was Burma. The rest of the market was often shared by Thailand and the U.S., with Italy and China occasionally supplying a substantial volume. (For example, in 1959 China's supply accounted for 35% of Indonesia's total imports.) The resurgent demand for rice in the late 1960's was satisfied largely by concessional sales from the developed countries. U.S. sales alone accounted for approximately half of Indonesia's total import needs. Other concessional sales came from Japan and Italy.

Before the period of the import ban, the performance of Thai exports in this market had been rather satisfactory. Thai rice accounted for half of the limited imports during 1965-67, but the absolute volume was much smaller than the previous level. Despite the reopening of trade, Thai exports declined even further. It is apparent that Thai exports were not able to compete against concessional sales.

^{3/} The Government normally imports rice for the stock which is later distributed to the consumers at a low subsidized price. During the halt in import programmes, the government distribution of rice was restricted. Consumption of maize and other alternative foods was, instead, encouraged. The expectation of good cropping seasons was also an important factor for the import ban decision.

D. Japan (See also Table A-IV)

1) *The Demand Trend*: Under the system of price supports, Japan had achieved self-sufficiency in rice by the late 1960's. Rice imports have shown a marked downward trend since 1957. During 1964-67, however, the emergence of a supply shortage forced the Japanese government to import a substantial quantity of rice. The share in total world imports for this period was close to 10% as contrasted to only 3% during 1960-63. After the internal supply problem was settled in 1968, Japan's role as a rice importer virtually came to an end.

2) *The Market Environment and the Performance of Thai Rice*: The differentiation of products plays a prominent role in the Japanese market. Imported rice may be classified into three types: 1) round grain (for supplementing the domestic supply as the staple food), 2) long grain (for the consumers with distinctive taste), and 3) broken rice (for the use as raw material in the food processing industry). According to an FAO estimation, round grain accounted for 85% of the total imports in 1966. For Thailand (who can supply only long grain rice), the market opportunity associated with Japan's import need during 1964-67 is actually rather limited. In fact, supply of Thai rice represented only 17% of total imports.

TABLE A-I
Hong Kong

Year	Rice Imports		Thai Exports (th. tons)	Market Distribution (%)	
	Volume (th. tons)	% Share in World Imports		Thai	China
(1)	(2)	(3)	(4)	(5)	(6)
1955				68.9	14.0
1956				64.7	18.4
1957	299.9	4.7	191.8	63.1	20.6
1958	367.7	5.9	171.4	45.3	37.5
1959	346.8	5.6	162.8	47.2	1.8
1960	369.9	5.5	179.6	46.3	20.3
1961	393.5	6.5	194.9	48.7	32.0
1962	426.5	6.9	218.7	51.1	33.7
1963	411.9	6.1	190.0	48.0	27.2
1964	411.1	5.5	205.1	49.3	35.1
1965	370.3	4.8	205.1	54.5	30.3
1966	366.6	4.9	214.4	58.7	31.9
1967	420.8	6.0	214.3	53.0	20.4
1968	314.0	4.7	173.8	39.2	33.4
1969	347.0	5.5	195.6	51.7	25.2
1970	344.5	4.7	210.3	55.9	26.8

Notes and Sources: Same for subsequent tables unless otherwise noted.

Notes on Units: Volume figures are in thousand tons. Market shares are in percentages.

Sources: (2) FAO, *Trade Yearbook*.

(3) Computed from (2) and data on total world imports given in the same source.

(4) Bank of Thailand, *Monthly Bulletin*.

(5), (6) Computed from data on imports breakdown by sources of supply. (1955-61) FAO, *World Rice Economy in Figures*, (1962-70). UN, *Commodity Trade Statistics*.

TABLE A-II

Singapore

Year	Rice Imports		Thai Exports	Market Distribution		
	Volume	World Share		Thai	China	Burma
1961	335.5	5.5	195.0	n.a.	n.a.	n.a.
1962	349.5	5.5	172.8	50.2	15.2	19.2
1963	439.9	6.4	176.9	40.0	19.1	17.1
1964	270.3	3.6	227.8	67.9	6.8	7.7
1965	291.0	3.7	172.3	66.8	12.7	5.8
1966	261.5	3.8	143.3	56.0	25.0	7.1
1967	256.2	3.6	118.7	46.0	32.6	5.8
1968	286.2	4.2	130.9	46.7	27.3	1.8
1969	235.7	3.8	133.8	58.2	19.3	6.8
1970	280.8	3.8	139.4	51.3	17.9	26.9

TABLE A-III
Indonesia

Year	Rice Imports		Thai Exports		U.S. Market Share
	Volume	World Share	Volume	Market Share	
(1)	(2)	(3)	(4)	(5)	(6)
1957	563.4	8.8	178.6	31.7	
1958	681.5	11.0	130.8	19.1	
1959	869.3	9.7	74.6	12.3	
1960	962.0	14.2	137.9	14.3	
1961	1065.1	17.8	376.1	35.3	
1962	1063.9	17.7	266.2	25.0	
1963	1070.2	15.8	339.7	31.7	10.0
1964	1016.1	13.7	452.4	44.5	3.8
1965	193.0	2.5	108.6	56.0	—
1966	306.0	4.1	167.0	54.5	26.7
1967	346.6	4.9	176.5	50.9	25.2
1968	707.1	10.5	44.5	6.2	52.4
1969	604.6	9.6	81.3	13.4	53.5
1970	956.1	12.8	143.9	15.0	46.5

Notes: a) Market share (5), i.e. percentage share of Thai rice in Indonesia's total rice imports, is computed as $(4)/(2)\%$.
 b) (6) is calculated from data on U.S. exports and (2).

TABLE A-IV

Japan

Year	Rice Imports		Thai Exports	Market Distribution				
	Volume	World Share		Thai	Taiwan	Burma	U.S.	China
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1957	347.2	5.5	146.3	33.3	33.0	30.6	—	—
1958	505.4	8.2	72.5	8.9	37.7	10.4	—	—
1959	271.4	4.5	93.2	27.2	59.1	10.4	—	—
1960	174.6	2.6	90.0	36.7	19.1	26.7	—	—
1961	125.8	2.1	50.5	26.9	55.1	5.0	—	—
1962	177.8	2.9	64.2	35.4	29.2	11.9	—	—
1963	222.0	3.3	105.4	42.2	38.3	12.8	—	—
1964	415.1	5.6	128.3	28.2	24.6	8.6	25.7	—
1965	967.3	12.4	151.8	15.0	28.3	4.7	30.0	17.4
1966	811.7	10.9	91.8	10.4	19.4	3.7	19.2	38.6
1967	509.4	7.2	136.9	25.2	11.2	—	19.4	39.9
1968	270.9	4.0	98.4	32.7	22.3	5.5	0.8	38.7
1969	56.2	0.9	63.3	95.7	—	—	—	3.9
1970	18.8	0.3	31.5	n.a.	n.a.	n.a.	n.a.	n.a.

TABLE A-V
West Malaysia

Year	Rice Imports		Thai Exports	
	Volume	World Share	Volume	Market Share
(1)	(2)	(3)	(4)	(5)
1961	341.2	5.6	248.1	58.8
1962	315.2	5.0	198.9	50.6
1963	405.2	5.9	250.6	52.5
1964	415.3	5.5	293.5	57.9
1965	298.0	3.8	271.0	69.9
1966	243.8	3.3	154.1	45.8
1967	300.7	4.3	204.4	51.9
1968	244.4	3.6	191.0	59.9
1969	230.3	3.7	151.4	47.9
1970	271.8	3.6	127.9	34.8

Note: (4) and (5) also include the trade with Sabah and Sarawak.

TABLE A-VI

Saudi Arabia

Year	Rice Imports		Thai Exports	
	Volume	World Share	Volume	Market Share
1957	89.1	1.4	69.7	78.2
1958	54.8	0.9	44.5	81.2
1959	105.4	1.7	93.7	88.8
1960	104.0	1.5	85.9	82.5
1961	116.6	1.9	58.4	50.0
1962	92.6	1.5	70.5	76.1
1963	179.7	2.7	69.4	38.6
1964	120.3	1.6	65.4	54.3
1965	140.5	1.8	76.7	54.5
1966	142.4	1.9	53.5	37.5
1967	125.4	1.9	61.7	49.2
1968	124.0	1.8	72.1	58.1
1969	150.7	2.4	65.6	43.5
1970	233.4	3.1	120.6	51.6

TABLE A-VII

Ceylon

Year	Rice Imports		Thai Exports	
	Volume	World Share	Volume	Market Share
(1)	(2)	(3)	(4)	(5)
1960	528.1	7.8	8.4	n.a.
1961	469.0	7.5	62.5	n.a.
1962	410.7	6.5	45.0	n.a.
1963	402.7	6.0	36.7	n.a.
1964	658.0	8.9	30.4	n.a.
1965	642.0	8.2	186.3	29.0
1966	693.2	9.3	112.4	16.2
1967	354.7	5.0	97.7	27.5
1968	369.9	5.5	56.9	15.3
1969	273.6	4.4	30.6	11.1
1970	479.6	6.4	22.8	4.7

TABLE A-VIII

India

Year	Rice Imports		Thai Exports	
	Volume	World Share	Volume	Market Share
1960	698.7	10.3	—	—
1961	384.2	6.4	—	—
1962	377.2	6.3	—	—
1963	478.2	7.1	—	—
1964	644.6	8.7	34.6	5.3
1965	783.2	10.0	214.4	27.3
1966	787.0	10.6	181.0	22.9
1967	453.0	6.4	184.4	40.7
1968	446.3	6.6	208.0	46.6
1969	487.1	7.8	114.1	23.4
1970	331.2	4.4	33.5	10.1

11

AGGREGATE PRODUCTION STRUCTURE OF PADDY CULTIVATION IN THAILAND: A TIME SERIES ANALYSIS, 1951-1973*

Olarn Chairpravat

I. INTRODUCTION

The objective of this study is three-fold:

- (1) to estimate parameters of the aggregate production function of paddy cultivation in Thailand,
- (2) to ascertain the decision-making process of farmers in relation to their paddy growing activities and
- (3) to use the understanding from (1) and (2) to derive some policy alternatives such as estimating demand for fertilizer, subsidizing fertilizer price and guaranteeing minimum price of paddy.

II. DATA BASE

The analysis is based on a set of annual aggregate data pertaining to paddy output, planted area, damaged area, harvested area, irrigated area, amount of fertilizer, average rainfall during planting period, post-planting weather condition, rural population, paddy price and fertilizer price during 1951-1971. Indices of expected weather condition and expected paddy price are constructed under various alternative hypotheses by using past and current values of the relevant variables. These "expected" variables are then used in simulation exercises which will be subsequently reported.^{1/}

III. ANALYTICAL FRAMEWORK

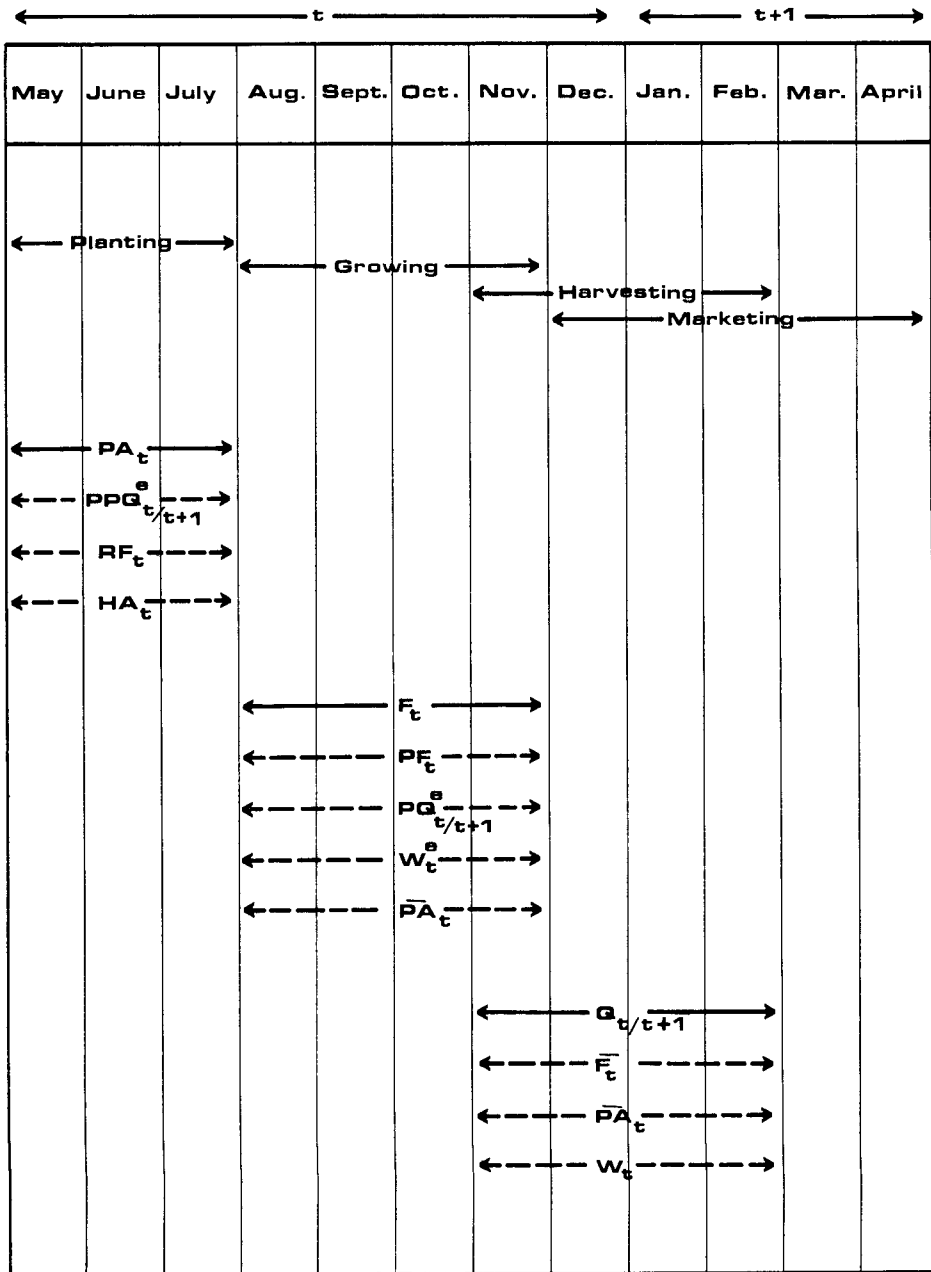
Chart 1 shows a typical cropping season of rice production and marketing in Thailand. Paddy fields are prepared and planted during the monsoon months from May-July. Farmers have to take care of growing plants by weeding, controlling water level, applying fertilizer and performing other necessary chores during August-November. The crop is harvested and threshed during November-February and marketed simultaneously from December until about mid year. The time reference for each variable is also shown in Chart 1 with dotted lines standing for explanatory variables and a solid line for the dependent variable in each stage of the farmers' decision making.

* The author is grateful to Mr. Montri Rammana, Mrs. Tasana Ratchatapoti, Mrs. Sunet Ratanawanit, Mr. Suthep Pongkiatkul, Miss Ngamsri Sukhumpat and Mr. Panom Potihom for their assistances in data collection, statistical calculation, and graphic presentation.

^{1/} A full version of this report with detailed descriptions of data base and statistical procedures will be published as an Occasional Paper of the Department of Economic Research, the Bank of Thailand.

Chart 1

TYPICAL CROPPING SEASON OF PADDY CULTIVATION IN THAILAND



The entire cycle of planting, growing, harvesting and marketing of paddy can be divided into 4 distinct decision-making stages, each having one variable as a decision or dependent variable the value of which must be chosen by farmers subject to various constraints. Once the decision is made and necessary action actually carried out, this dependent variable is given as a predetermined variable in the next decision-making stage together with other explanatory variables and constraints. The four stages and their relevant variables are as follows:

(1) *Holding Area Determination* In this study it is assumed that farmers try to hold as much land as possible subject to a population constraint which, in a short run, is the predetermined factor. The amount of holding area (HA_t) is then a function of farm population (NR_t):

$$HA_t = \alpha_1 + \beta_1 NR_t \dots\dots\dots(3.1.1)$$

(2) *Planted Area Determination (May–July)* Once the amount of holding area is given, the farmers have to decide on how much land to be devoted to rice farming. It is at this stage that expected prices of alternative crops and factor inputs might be important in determining the planted area subject to the predetermined holding area. This decision stage is studied in detail by Behrman who reports a low value of average short run (i.e. one year) relative price elasticity of planted area devoted to rice farming (about 0.2), compared with the estimated short run elasticities of about 1.0, 2.7, 1.0 for maize, kenaf and cassava planted areas.^{2/} Since Behrman does not include the amount of rainfall during May–July as an explanatory variable in his analysis of the planted area, we will attempt to incorporate this factor in the present study. The planted area (PA_t) is hypothesized to be a function of preliminary (up to July) expected paddy price ($PPQ_{t/t+1}^e$), rainfall during May–July (RF_t), and the acreage of holding area (HA_t)^{3/}:

$$PA_t = \alpha_2 + \beta_2 PPQ_{t/t+1}^e + \gamma_2 RF_t + \delta_2 HA_t \dots\dots\dots(3.2.1)$$

(3) *Fertilizer Use Determination (August–November)* By August most paddy fields have been planted and the farmers must decide on how much fertilizer to be used in order to maximize their expected net income ($\pi_{t/t+1}^e$) subject to the production function constraint ($Q_{t/t+1}^e$) and given planted area (\overline{PA}_t), expected weather condition (W_t^e), final (up to November) expected paddy price ($PQ_{t/t+1}^e$) as well as prevailing fertilizer price (PF_t).

The optimizing behaviour of farmers is hypothesized to be as follows:

$$\text{Maximize } \{F_t\} \pi_{t/t+1}^e = PQ_{t/t+1}^e \cdot Q_{t/t+1}^e - PF_t \cdot F_t \dots\dots\dots(3.3.1)$$

$$\text{subject to } Q_{t/t+1}^e = k(W_t^e) \cdot \overline{PA}_t^\alpha F_t^\beta \dots\dots\dots(3.3.2)$$

Once the values of α , β , PF_t are known and those of W_t^e and $PQ_{t/t+1}^e$ anticipated, the optimum amount of fertilizer (F_t^*) can be solved from equation (3.3.1) and (3.3.2). The demand for fertilizer can be expressed as:

$$F_t^* = (PF_t, PQ_{t/t+1}^e, W_t^e, \overline{PA}_t, \alpha, \beta) \dots\dots\dots(3.3.3)$$

^{2/} Jere R. Behrman, *Supply Response in Underdeveloped Agriculture: A Case of Four Major Annual Crops in Thailand, 1937–1963*, Amsterdam, North Holland Publishing Company, 1968, pp. 301–333.

^{3/} Only expected paddy price is used as the explanatory variable because there seems to be little possibility of substitution between rice and other crops which can be grown simultaneously on the same type of soil used as paddy fields in most parts of the country.

It can be seen from the production function (3.3.2) that only planted area and fertilizer are entered into the function as factor inputs. Other inputs such as labour and machinery are omitted on the implicit assumption that these factors are perfect complements which must be used in fixed proportions of the included factors. This assumption is made because there are no directly observable data on labour input and the volume of machinery services used in rice farming. As a result, the productive contributions of labour and machinery are included in the parameter α of the planted area. In view of the traditional farming technology practised in Thailand, the assumption that labour is generally used as a fixed proportion of planted area seems reasonable as a first degree of approximation. The specified Cobb-Douglas production function allows, however, for a possible substitution between planted area and fertilizer. After the desired amount of fertilizer is applied, the actual weather condition (W_t) will determine the actual paddy output ($Q_{t/t+1}$) which will, in general, differ from the expected output perceived during the third decision-making stage ($Q_{t/t+1}^e$).

(4) *Harvesting and Marketing Stage* Farmers will in the last stage decide on the amount of paddy to be retained for home consumption and future seeding requirement as well as the timing of sales of surplus grain. Factors such as sources and conditions of credit, cash requirements, price expectations and storage facilities are likely to influence the amount of paddy sales in each of the subsequent months. This phase of rice trading activity will not be analyzed in this study.^{4/}

IV. EMPIRICAL RESULTS

Results of statistical analyses of the first three decision-making stages will be described in detail as follows:

(1) *Holding Area Determination* The time profiles of holding area (HA_t), planted area (PA_t), and irrigated area (IA_t) are shown in Chart 2. A visual inspection of Chart 2 indicates that there is an apparent break in the temporal behaviour of HA_t —a faster rate of increase in HA_t from 1962–71 compared with that from 1951–61. This observed pattern is confirmed by the following regression equations:

$$HA_t = 38.90592 + 0.40552^{5/} \text{ TIME} \dots\dots\dots(4.1.1)$$

(.30020) (.04426)

$$t = 129.597 \quad 9.162$$

$$R^2 = .89240, \text{ SE} = .46426, N = 11 \text{ (1951–61)}$$

$$\text{TIME} = 1, 2, \dots, 11 \text{ for } 1951, 52, \dots, 61$$

$$HA_t = 32.4420 + 0.99572 \text{ TIME} \dots\dots\dots(4.1.2)$$

(.61500) (.03672)

$$t = 52.751 \quad 27.116$$

$$R^2 = .98789, \text{ SE} = .33353, N = 10 \text{ (1962–71)}$$

$$\text{TIME} = 12, 13, \dots, 21, \text{ for } 1962, 63, \dots, 71$$

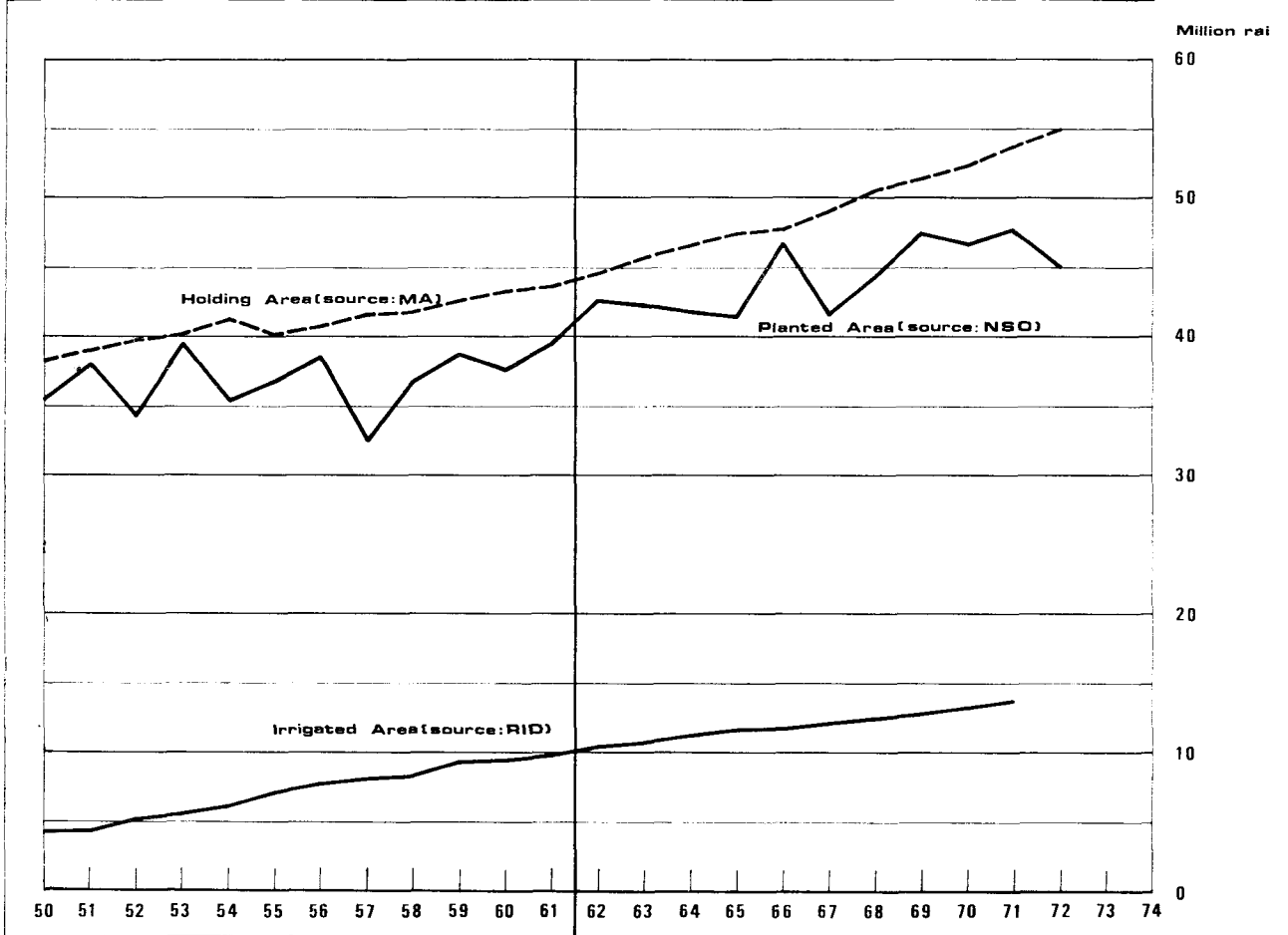
It can be seen that the rate of increase in holding area is about .40552 million *rai* a year from 1951–1961, compared with about .99572 million *rai* from 1962–71. Since there is no evidence to indicate that the rate of increase in rural population has changed substantially during the two subperiods, this structural break in HA_t must be

^{4/} For those who are interested in the pattern and timing of paddy sales among farmers in the Central Plain, see Udhis Naksawad, *Debt Burdens and Rice Trading Activities of Farmers in the Central Plain of Thailand, 1967–68* (in Thai), Bangkok, National Research Council and USOM, October, 1970, p. 121.

^{5/} Unless noted, all estimated parameters reported in this study are significantly different from zero at at least 5 per cent level, and R^2 is adjusted for degree of freedom.

Chart 2

**FARM HOLDING AREA
Rice Planted Area and Irrigated Area
of Thailand 1950-1972**



attributed to factors other than the movement in rural population. One of the factors is likely to be a gradual completion since 1962 of the Bhumipol Dam and associated water control and distribution facilities in the Greater Chao Phya Irrigation Project, especially in the Northern Plain, the West Bank and the Noi River. In view of this structural break in the behaviour of HA_t , it is desirable to use the regression equation based on data of holding area and rural population from the 1962-71 subperiod for making future projections of the holding area:

$$\begin{aligned}
 HA_t &= 6.95009 + 1.57367 NR_t^{6/} && \dots\dots\dots(4.1.3) \\
 & \quad (1.12975) \quad (.04231) \\
 t &= 6.152 \quad 37.193 \\
 R^2 &= .99353, SE = .24377, DW = 1.8027, N = 10 \text{ (1962-71)}
 \end{aligned}$$

(2) *Planted Area Determination (May-July)* The area planted during May-July is assumed to depend on the preliminary expected paddy price which is perceived during the period up to July ($PPQ_{t/t+1}^e$), the amount of rainfall during May-July (RF_t) and the holding area (HA_t). In addition, two factors are also considered: the completion of the Bhumipol Dam and other related irrigation projects since 1962 as well as the extremely small amount of rainfall during May-July of 1957.^{7/} Due to inadequacy of water control in the major rice growing Greater Chao Phya region prior to 1962, the extreme drought in 1957 had exerted a much more adverse effect on planted area, compared with other years during 1951-1961 and the years after 1962. It is desirable, therefore, to include two dummy variables in the planted area equation: DM_1 taking on the value of 1 for 1957 and 0 otherwise and DM_2 taking on the value of 1 for 1962 and after and 0 for 1951-1961. The estimated regression equation is:

$$\begin{aligned}
 PA_t &= 3.09100* + .00189* PPQ_{t/t+1}^{8/} + .01829 RF_t + .52262 HA_t \\
 & \quad (5.58827) \quad (.00225) \quad (.00449) \quad (.12475) \\
 t &= .553 \quad .842 \quad 4.073 \quad 4.189 \\
 & \quad - 3.654.60 DM_1 + 2.77971 DM_2 && \dots\dots\dots(4.2.1) \\
 & \quad (1.35426) \quad (1.11745) \\
 t &= 2.699 \quad 2.488 \\
 R^2 &= .91964, SE = 1.23134, DW = 2.24543, N = 21 \text{ (1951-71)}
 \end{aligned}$$

*not significantly different from zero at 5 per cent level, other estimated parameters are significant at at least 5 per cent level.

It can be seen from equation (4.2.1) that the effect of $PPQ_{t/t+1}^e$ on PA_t is positive but not significant. This relatively weak effect of $PPQ_{t/t+1}^e$ is consistent with that observed by Behrman mentioned earlier. Another equation is estimated by dropping $PPQ_{t/t+1}^e$:

6/ For future projections the rural population (NR_t) itself is assumed to be dependent on time:

$$\begin{aligned}
 NR_t &= -15.7565 + 0.63301 TIME && \dots\dots\dots(4.1.4) \\
 & \quad (.96194) \quad (.01445) \\
 t &= -16.068 \quad 43.802 \\
 R^2 &= .99532, SE = .13126, N = 10 \text{ (1962-71)} \\
 TIME &= 62, 63, \dots\dots\dots, 71
 \end{aligned}$$

7/ The average rainfall in 1957 is only 522.47 m.m., the lowest on record during 1951-61 which has the average rainfall (excluding 1957) of about 612.35 m.m.

8/ $PPQ_{t/t+1}^e$ is equal to the average paddy price received by farmers during January-July of year t. This formulation is based on the "simple" or "naive" price expectation hypothesis. We have experimented with other hypotheses such as the weighted average and the trend extrapolation of current and past period prices. The empirical results are not as satisfactory as those obtained from the simple expectation hypothesis, however.

$$\begin{aligned}
 PA_t &= 4.28321^* + .01796 RF_t + .54037 HA_t \\
 &\quad (5.35648) \quad (.00443) \quad (.12183) \\
 t &= .800 \quad 4.052 \quad 4.435 \\
 &\quad - 3.63129 DM_1 + 2.96311 DM_2 \quad \dots\dots\dots(4.2.2) \\
 &\quad (1.3416) \quad (1.0860) \\
 t &= - 2.707 \quad 2.728 \\
 R^2 &= .9211, SE = 1.22008, DW = 2.2573, N = 21 (1951-71)
 \end{aligned}$$

*not significantly different from zero at 5 per cent level.

This second equation will be used in later simulation exercises.

(3) *Fertilizer Use Determination (August–November)* In order to derive the demand function for fertilizer, it is necessary to estimate the production function of rice farming. We have experimented with alternative specifications of the production function incorporating planted area, irrigated area, fertilizer, weather conditions and some dummies as the explanatory variables of the paddy output.^{9/} Most specifications yield reasonable coefficients except for the cases in which both fertilizer and irrigated area are included as the explanatory variables. Because of high colinearity between fertilizer and irrigated area, it is not possible to measure separate effects of the two variables on paddy output. When either of the two variables is dropped from the regression, the remaining variable yields a significant coefficient. This result can be explained by the fact that irrigation and fertilizer tend to be highly complementary in the sense that water control in paddy fields is a prerequisite for effective fertilizer applications. The acreage of irrigated area is therefore dropped from the estimated production function under the assumption that the fertilizer will be applied in paddy fields only when there is adequate control of water level through irrigation facilities. The “best” production function of the Cobb-Douglas type is estimated as follows:

$$\begin{aligned}
 \ln Q_t &= - 3.68775 - .01231 W_t + .03052 \ln F_t + 1.56279 \ln PA_t \\
 &\quad (.68680) \quad (.00343) \quad (.01067) \quad (.20393) \\
 t &= - 5.369 \quad -3.580 \quad 2.859 \quad 7.663 \quad \dots\dots\dots(4.3.1) \\
 R^2 &= .95755, SE = .04884, DW = 1.69125, N = 21 (1951-71)
 \end{aligned}$$

As described in the analytical framework, if farmers are profit maximizers, they will use the amount of fertilizer F_t^* in order to maximize their expected net income subject to the expected production function ($Q_{t/t+1}^e$), expected weather condition (W_t^e), the pre-determined planted area (\overline{PA}_t), and the prevailing fertilizer price (PF_t). For given values of \overline{PA}_t and weather condition (\overline{W}_t), the estimated production function (4.3.1) can be rewritten as

^{9/} Alternative measurements of fertilizer and weather conditions are also used in the experiment. The measurements which are theoretically most logical and/or yield the best statistical fit are reported as the most satisfactory in this study. W_t is measured by the percentage of damaged area.

$$Q_t = K_t F_t^{.03052} \overline{PA}_t^{1.56279} \dots\dots\dots(4.3.2.)$$

$$K_t = e^{(-3.68775 - .01231 \overline{W}_t)10/}$$

$$\text{Max } \pi_{t/t+1}^e = PQ_{t/t+1}^e \cdot Q_{t/t+1}^e - PF_t \cdot F_t$$

$$\{F_t\}$$

$$\text{subject to } Q_{t/t+1}^e = K_t F_t^{.03052} \overline{PA}_t^{1.56279}$$

$$\frac{\partial \pi_{t/t+1}^e}{\partial F_t} = 0 \implies PQ_{t/t+1}^e \cdot \frac{\partial Q_{t/t+1}^e}{\partial F_t} - PF_t = 0$$

$$PQ_{t/t+1}^e \cdot K_t (.03052) F_t^{-.96948} \overline{PA}_t^{1.56279} = PF_t$$

$$F_t^{-.96948} = \frac{PF_t}{PQ_{t/t+1}^e \cdot K_t (.03052) \overline{PA}_t^{1.56279}}$$

$$\text{or } -.96948 \ln F_t = \ln PF_t - \ln PQ_{t/t+1}^e - \ln K_t - \ln (.03052)$$

$$\qquad \qquad \qquad - 1.56279 \ln \overline{PA}_t$$

$$-.96948 \ln F_t = \ln PF_t - \ln PQ_{t/t+1}^e + (3.68725 + .01231 \overline{W}_t^e)$$

$$\qquad \qquad \qquad - \ln (.03052) - 1.56279 \ln \overline{PA}_t \dots\dots\dots(4.3.3.)$$

The numerical value of F_t^* (F_t^*) can be solved from equation (4.3.3.) if the values of PF_t , $PQ_{t/t+1}^e$, \overline{W}_t^e and \overline{PA}_t are specified.

Using the actual values of \overline{PA}_t and PF_t and the constructed values of \overline{W}_t^e and $PQ_{t/t+1}^e$ for 1960–1972, the values of annual F_t^* are solved and plotted against the actually observed values of fertilizer in Chart 3.^{11/} The value of PF_t is assumed to be 2,000 baht a ton for 1960–1971 and 2,200 baht in 1972.

Chart 3 shows that the simulated F_t^* is always greater than the actual F_t until 1972 in which F_t exceeds F_t^* for the first time. Throughout the 1950's and 1960's Thai farmers tend to use less fertilizer than the profit maximizing level. The difference between the optimum amount of fertilizer and the actually used level has steadily declined over time, however. The percentage of actual fertilizer application to the simulated optimum level (λ_t) during 1960–1972 is plotted in Chart 4. Starting from a relatively low level of about 10 per cent in 1960, λ_t has increased over time and reached the full 100 per cent adjustment by 1972. The time path of this adjustment curve is approximated by the following regression equation:

^{10/} As can be seen from the following derivation, (4.3.2.) is equivalent to (4.3.1):

$$\text{if } Q_t = e^{(-3.68775 - .01231 \overline{W}_t)} F_t^{.03052} \overline{PA}_t^{1.56279}$$

$$\ln Q_t = \ln e^{(-3.68775 - .01231 \overline{W}_t)} + .03052 \ln F_t + 1.56279 \ln \overline{PA}_t$$

$$= -3.68775 - .01231 \overline{W}_t + .03052 \ln F_t + 1.56279 \ln \overline{PA}_t$$

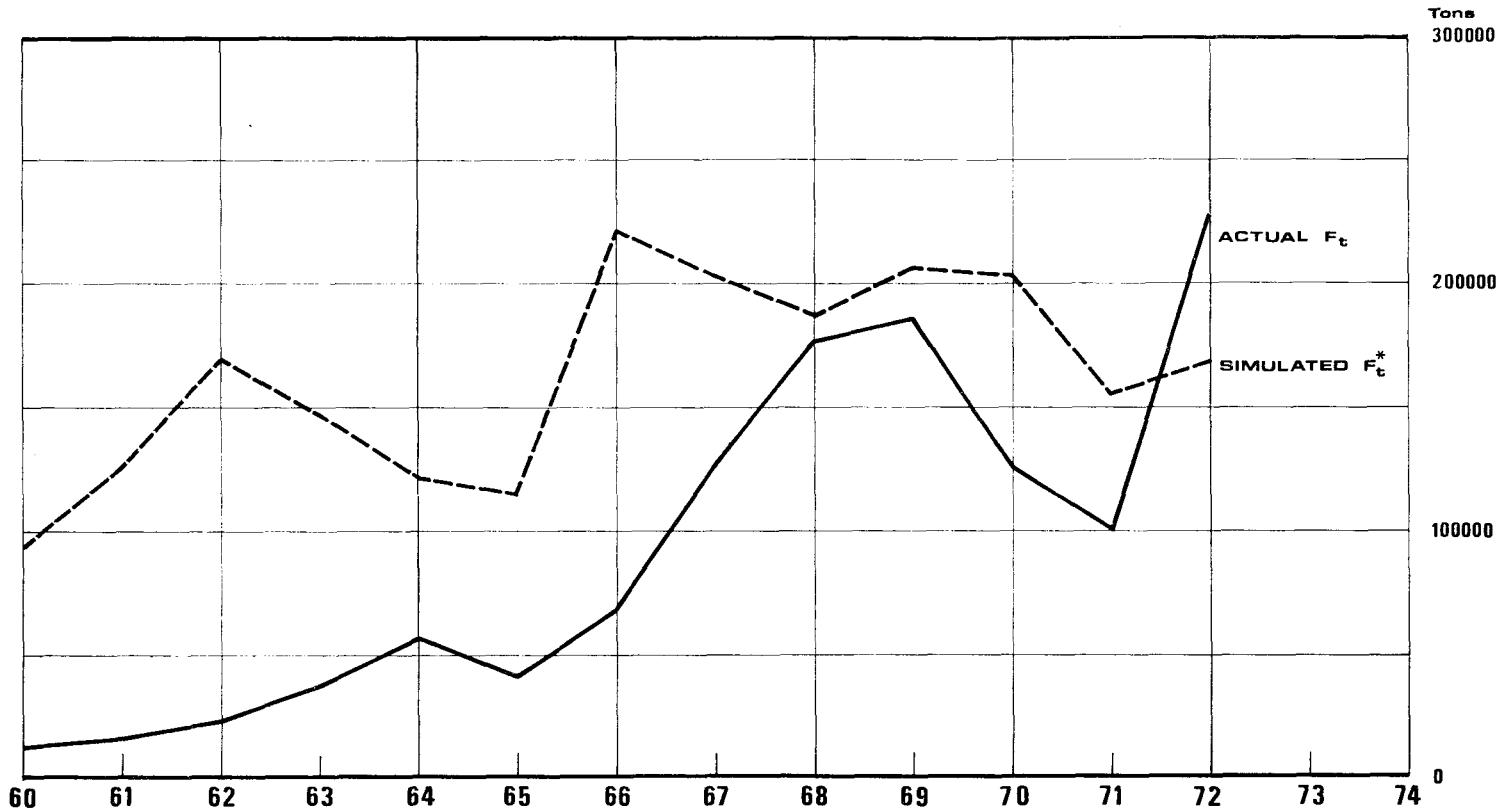
^{11/} The simple expectation hypothesis is used to construct \overline{W}_t^e and $PQ_{t/t+1}^e$.

$$\overline{W}_t^e = \text{actual } \overline{W}_{t-1}, PQ_{t/t+1}^e = \text{actual } PQ_t$$

PQ_t is the average paddy price actually received by farmers during January–November of year t.

Chart 3

**SIMULATED AND ACTUAL VALUES
of Fertilizer Used in Paddy Fields
of Thailand 1960-1972**



Aggregate production structure

$$\ln \lambda_t = 2.62755 + .18199 \text{ TIME} \dots\dots\dots(4.3.4.)$$

(.017038) (.02409)
 t = 15.421 7.553
 $R^2 = .82365$, SE = .32507, N = 13 (1960–1972)
 TIME = 0, 1, 2,, 12 for 1960, 1961, 1962,, 1972

The above equation can be rewritten as

$$\lambda_t^* = 13.83982 e^{.18199t} \dots\dots\dots(4.3.5.)$$

The value of λ_t^* solved from equation (4.3.5.) with $t = 0, 1, 2, \dots, 12$ is shown by the dotted line in Chart 4. The observed behaviour of incomplete adjustment in fertilizer use can be explained by the “diffusion” hypothesis of adopting new types of factor inputs on the part of Thai farmers.^{12/}

The farmers’ reluctance to fully adopt new inputs or modern technology tends to diminish over time as accumulated experiences indicate that *the full adoption of such factors and technology is profitable* and therefore economically justifiable. Farmers are after all *homo economus* whose guiding principle is profitability.

V. POLICY APPLICATIONS

It is apparent that the government has several policy alternatives at its disposal if it decides to intervene in the free market in order to achieve a set of objectives such as maximizing paddy output and exportable surplus, increasing net farm income or maintaining relatively low price of milled rice for urban consumers. It should be clear that some of these goals are in unavoidable conflict—e.g. higher farm price means higher price of milled rice—unless an adequate number of policy instruments can be identified and used simultaneously to achieve most of these conflicting goals. We will perform the following simulation exercises as an example to point out direction and probable quantitative impact of some policy options.

(1) *Estimation of Fertilizer Demand* Chart 5 shows the demand function of fertilizer at different levels of fertilizer price relative to expected paddy price for the 1974–75 season. The function is simulated under the profit maximizing assumption on the part of farmers subject to the estimated production function, the expected post-planting weather condition (7.5 per cent damaged area) and the estimated planted area of 48.765 million *rai*. If fertilizer price is about twice as that of the expected paddy price (e.g. 4,600 : 2,300 baht a ton), approximately 220,000 tons of fertilizer will be required to satisfy the farmers’ demand for that input.

(2) *Subsidy on Fertilizer Price* If the government has already decided and declared to keep maximum prices of paddy and milled rice at some mutually consistent levels, say 2,300 baht a ton for farm-gate paddy price in the Central Plain and 4,920 baht a ton for 5 per cent milled rice in Bangkok retail markets^{13/} and if the world market for rice is in such a way that the average f.o.b. export price of rice of all qualities will be about 9,000 baht a ton,^{14/} it is possible to simulate the amount of fertilizer demanded at various levels of subsidized price, the resulting output, net income to farmers, volume of exportable surplus and other consequences under the probable

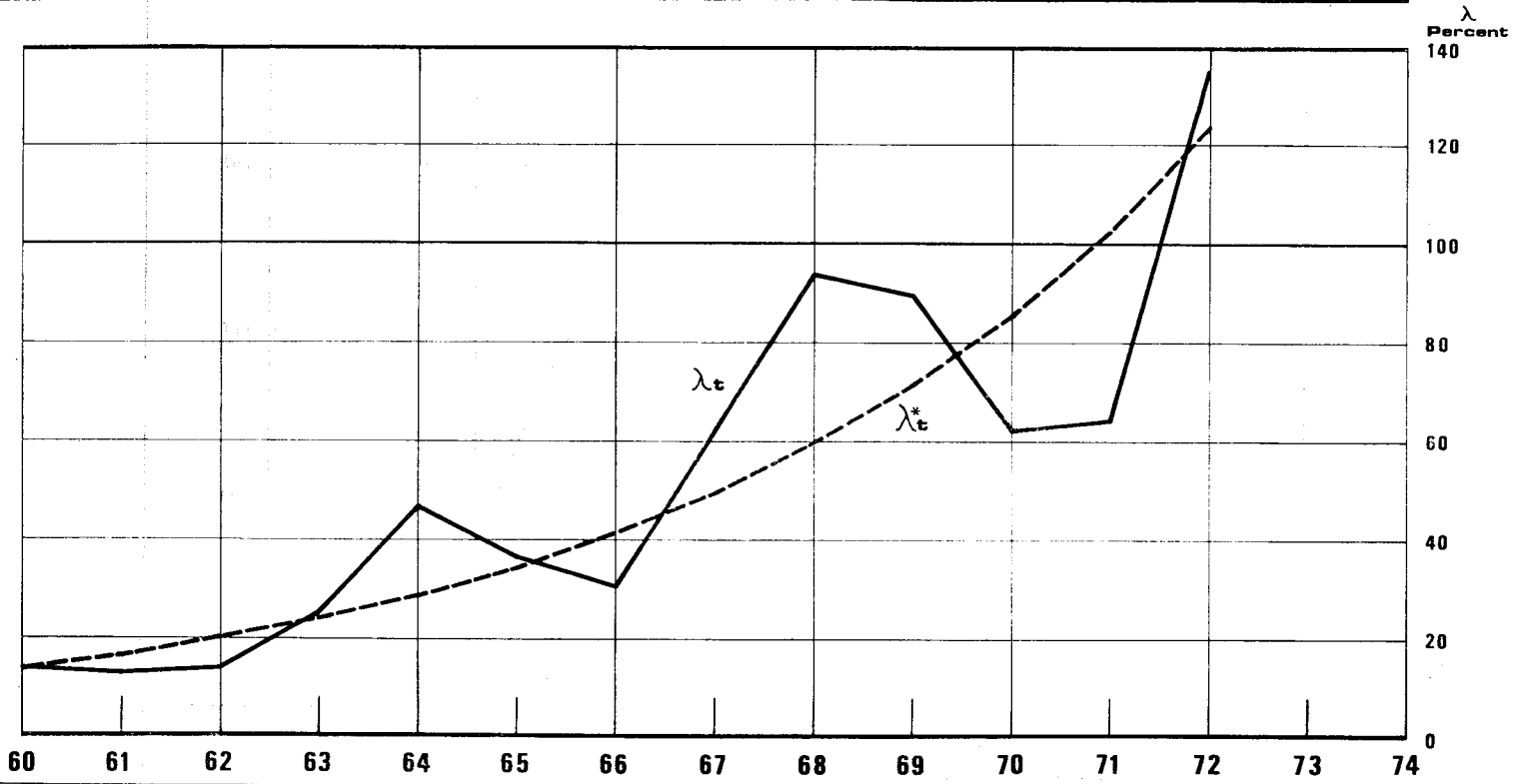
^{12/} The author is grateful to Dr. Ammar Siamwalla of Thammasat University for suggesting a possibility of using this “diffusion” hypothesis to explain the apparent difference between actual F_t and simulated F_t^* .

^{13/} This is approximately the same as the prevailing price during the first quarter of 1974.

^{14/} This is about 10 per cent lower than the prevailing price during the first quarter of 1974.

Chart 4

**RATIO OF ACTUAL FERTILIZER USE
to Optimum Amount of Fertilizer
Application of Thailand
1960 - 72**

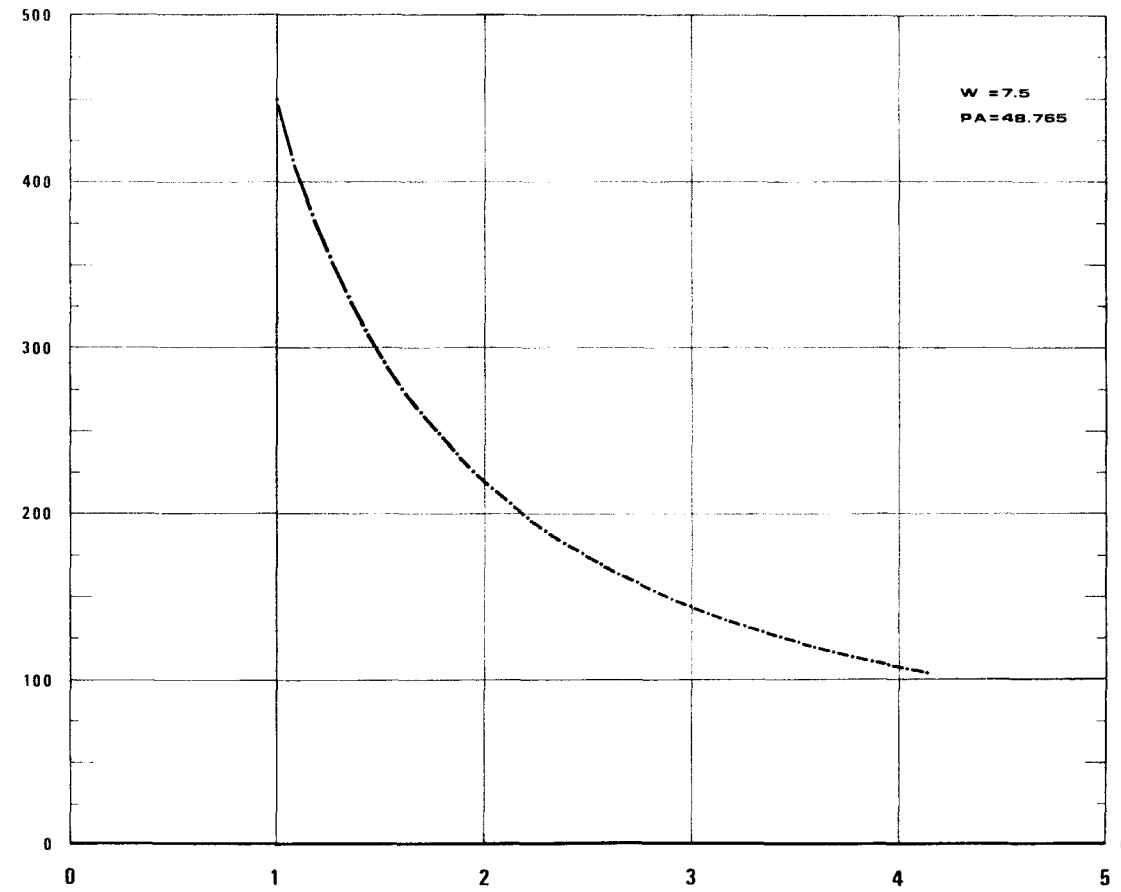


Aggregate production structure

Chart 5

DEMAND FUNCTION FOR FERTILIZER
Used in Paddy Fields of the 1974/75
Crop Year of Thailand

Fertilizer Demanded
(1000Ton)



Fertilizer to
Expected
paddy price

TABLE I

Simulated and Assumed Values of Variables Associated with Alternative Subsidy Rates on Fertilizer Price in the Main 1974/75 Paddy Season of Thailand

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Subsidized Farm Gate Price of Fertilizer (baht/ton)	Unit Government Subsidy (baht/ton)	Total Fertilizer Demanded (ton)	Expected Paddy Output (mill. tons)	Expected Gross Farm Income (mill. bahts)	Fertilizer Cost to Farmers (mill. bahts)	Net Farm Income (mill.bahts)	Total Subsidy Paid by Gov't (mill. bahts)	Max. Exportable Surplus of Paddy (mill. tons)	Gross Revenue to Gov't (mill. bahts)	Net Revenue to Gov't (mill. bahts)	Total Export Earning from Rice (mill. bahts)	Total Gross Revenue to Traders, Millers etc. from Rice Trade (mill.bahts)
				(5)=2,300×(4)	(6)=(1)×(3)	(7)=(5)-(6)	(8)=(2)×(3)	(9)=(4)-12.374	(10)=2,720×(9)	(11)=(10)-(8)	(12)=5,940×(9)	
5,000 (free market price)	0	202,194	14.402	33,124.7	1,010.9	32,113.8	0	2.028	5,516.2	5,516.2	12,046.3	3,449.1
4,900	100	206,451	14.411	33,145.8	1,011.6	32,134.2	20.645	2.037	5,540.6	5,520.0	12,099.8	3,457.4
4,800	200	210,889	14.420	33,167.3	1,012.3	32,155.1	42.178	2.046	5,565.1	5,522.9	12,153.2	3,465.7
4,700	300	215,519	14.430	33,189.3	1,012.9	32,176.4	64.656	2.056	5,592.3	5,527.7	12,212.6	3,474.9
4,600	400	220,353	14.440	33,211.8	1,013.6	32,198.2	88.141	2.066	5,619.5	5,531.4	12,272.0	3,484.1
4,500	500	225,406	14.450	33,234.8	1,014.3	32,220.5	112.703	2.076	5,646.7	5,534.0	12,331.4	3,493.3
4,400	600	230,692	14.460	33,258.3	1,015.0	32,243.3	138.415	2.086	5,673.9	5,535.5	12,390.8	3,502.5
4,300	700	236,228	14.471	33,282.4	1,015.8	32,266.6	165.360	2.097	5,703.8	5,538.4	12,456.2	3,512.6
4,200	800	242,031	14.481	33,307.1	1,016.5	32,290.5	193.625	2.107	5,731.4	5,537.8	12,515.6	3,521.8
4,100	900	248,123	14.492	33,332.3	1,017.3	32,315.1	223.311	2.118	5,760.9	5,537.6	12,580.9	3,531.9
4,000	1,000	254,524	14.503	33,358.3	1,018.1	32,340.2	254.524	2.129	5,790.9	5,536.4	12,646.3	3,542.1
3,900	1,100	261,258	14.515	33,384.9	1,018.9	32,366.0	287.384	2.141	5,823.5	5,536.1	12,717.5	3,553.1
3,800	1,200	268,353	14.527	33,412.5	1,019.7	32,392.4	322.023	2.153	5,856.2	5,534.1	12,788.8	3,564.1
3,700	1,300	275,837	14.539	33,440.2	1,020.6	32,419.6	358.588	2.165	5,888.8	5,530.2	12,860.1	3,575.2
3,600	1,400	283,744	14.552	33,469.1	1,021.5	32,447.6	397.241	2.178	5,924.2	5,526.9	12,937.3	3,587.1
3,500	1,500	292,110	14.565	33,498.8	1,022.4	32,476.4	438.164	2.191	5,959.5	5,521.4	13,014.5	3,599.1
3,400	1,600	300,976	14.578	33,529.4	1,023.3	32,506.1	481.561	2.204	5,994.9	5,513.3	13,091.8	3,611.1
3,300	1,700	310,388	14.592	33,560.9	1,024.3	32,536.6	527.659	2.218	6,033.0	5,505.3	13,174.9	3,623.9
3,200	1,800	320,397	14.606	33,593.4	1,025.3	32,568.2	576.715	2.232	6,071.0	5,494.3	13,258.1	3,636.8
3,100	1,900	331,064	14.620	33,627.0	1,026.3	32,600.7	629.021	2.246	6,109.1	5,480.1	13,341.2	3,649.7
3,000	2,000	342,452	14.635	33,661.7	1,027.3	32,634.4	684.905	2.261	6,149.9	5,465.0	13,430.3	3,663.5

Targetted Maximum Bangkok Retail Price of 5% Milled Rice = 4,920 baht/ton or 73 baht/tang

Targetted Maximum Farm Gate Price of Paddy = 2,300 baht/ton

Estimated Domestic Demand for Paddy = 12.374 million tons

Assumed f.o.b. Export Price of Rice = 9,000 baht/ton

Assumed f.o.b. Export Price of One Ton of Paddy = 5,940 baht/ton

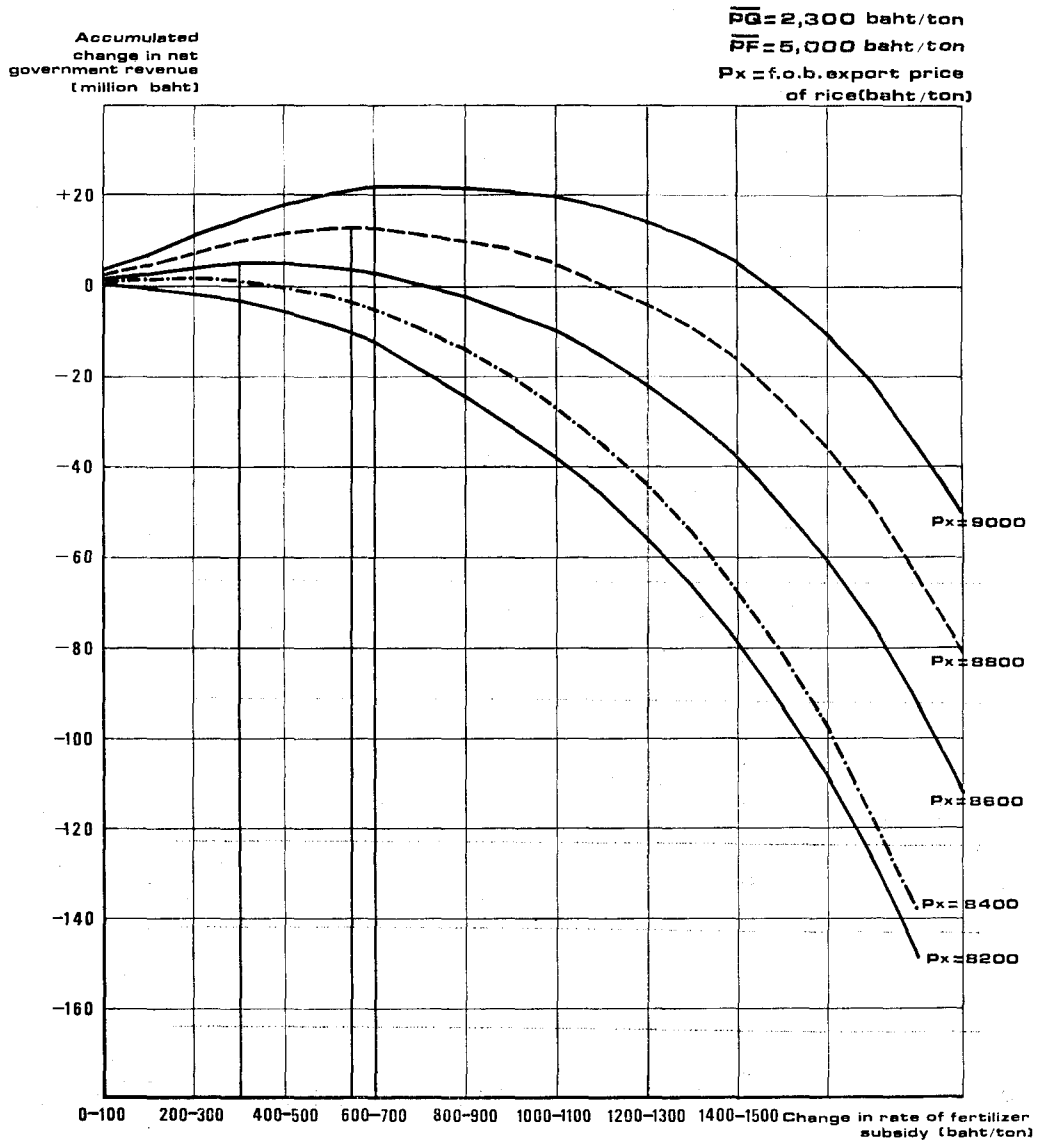
Necessary Premium and Export Duty on Exported Rice = 4,121 baht/ton

Necessary Premium and Export Duty on One Ton of Paddy = 2,720 baht/ton

Assumed Free Market Price of Fertilizer at Farm Level = 5,000 baht/ton

Chart 8

Accumulated Change in Net Government Revenue and Change in Rate of Fertilizer Subsidy at Various f.o.b. Prices of Exported Rice (P_x) for a Fixed Farm Gate Price of Paddy ($\overline{P_G}$) and a Free Market Price of Fertilizer ($\overline{P_F}$)



assumptions regarding rural population, holding area, post-planting weather condition, per capita domestic rice consumption requirement, free market price of fertilizer and other factors.

Table I shows the effects of subsidizing fertilizer price at different rates under the previously stated quantitative conditions and the additional assumption that the free market price of fertilizer at farm level is about 5,000 baht a ton.^{15/} It can be seen from Table I that the amount of fertilizer demanded will increase as the government subsidizes the farmers at higher rates. The volume of paddy output and exportable surplus will also rise with fertilizer applications because the domestic consumption requirement remains fixed as long as the retail price of rice is maintained at the desired level by employing necessary export tax and/or export quota restriction policies.

Net farm income will always improve with higher rates of fertilizer subsidy but net revenue received by the government might move in any direction depending on the assumed level of f.o.b. price of rice (which depends on the world market condition), the desired domestic prices (which are policy targets), and the given price of imported or locally produced fertilizer in the free market.

For the assumed values used in Table I net revenue to the government will continue to increase until the subsidy reaches more than 700 baht a ton. Gross revenue to millers, traders and other economic units in the country who perform intermediary and processing functions will also increase with higher volume of paddy output. The Pareto optimum level of subsidy rate is at 700 baht a ton because it is possible to maintain or increase the welfare of all concerned parties when the subsidy rate is increased from nothing to about 700 baht a ton.

This optimum rate of fertilizer subsidy will decline if it is estimated that the f.o.b. export price is lower than 9,000 baht a ton. Chart 6 shows different optimum subsidy rates as the f.o.b. export price decreases from 9,000 baht a ton. It is no longer possible to achieve Pareto Optimality by subsidizing fertilizer price if the f.o.b. export price falls below 8,200 baht a ton while the farm-gate price of paddy is politically decided to be about 2,300 baht a ton and the Bangkok retail price of 5% rice at 4,920 baht a ton (73 baht a *tang*). It should be noted that net revenue to the government remains relatively constant throughout the illustrated range of subsidy rates whereas net income to farmers improves markedly. If the government decides to subsidize the farmers at the rate of up to 2,000 baht a ton, its expected net revenue will decline by about 50 million baht from the non-subsidy level, compared with the improvement of net farm income of more than 500 million baht. Total earning from rice export also increases substantially from 12,046.3 to 13,430.3 million baht, an improvement of over 1,300 million baht in the trade balance of the country.^{16/}

It is most urgent for the government, therefore, to introduce the programme of providing productive farm inputs for the farmers at subsidized prices in order to maximize the welfare of the farming population and increase the net foreign-exchange earning of the country without jeopardizing too much of the government revenue or the welfare of the urban consumers, especially during the period in which the foreign demand for Thai rice remains very buoyant.

^{15/} The model can simulate quantitative impacts of this type of policy option for any combination of f.o.b. export price of rice and free market price of fertilizer.

^{16/} This is an overestimation because most of the increase in fertilizer requirement will have to be met by imports. The net trade balance after subtracting import payments for fertilizer still increases by about 800 million baht, however.

Part 5

Economic Development

A MACROECONOMETRIC MODEL FOR THAILAND A CLASSICAL APPROACH

Virabongsa Ramangkura

I. GENERAL FRAMEWORK OF THE MODEL

In constructing medium size macro-econometric models one faces many difficulties and limitations, especially when one is dealing with a developing economy, since the economy involves many unquantifiable socio-political and institutional factors. A good model should reflect the effects of under-developed characteristics of the economy which are not found in other advanced countries.

The Keynesian system, the basis of many short-run model of a more developed economy, may not be suitable to explain the economic phenomena of an underdeveloped economy. Klein has suggested that many other points should be taken into consideration when one is modelling a developing economy.^{1/} The developing economies are usually characterized by limitations on output capacity in contrast with a shortage of effective demand found in the advanced industrial economies. Therefore, emphasis on the supply side should be considered more carefully. It would also seem appropriate to account for the juxtaposition of the existing investment opportunities and the non-existence of a well-developed and organized capital market, instead of relying on the post Keynesian acceleration principle or the stock adjustment investment theory in considering a suitable hypothesis underlying investment in a developing country. Hence, sources of funds should be more strongly emphasized. Given this consideration, loans from financial institutions would be determined by supply rather than demand.

In addition, due to the underdeveloped characteristics of the Thai economy such as the non-existence of any effective labour unions, etc., the classical theory of money with some modifications seems more relevant for price determination than the cost-push theory. Furthermore, the non-economic phenomena such as geographical environment, internal and external political events (i.e. war in some neighbouring countries and changes in government administration), should be taken into consideration in explaining the existing structure of the economy. Foreign trade is regarded as one of the most influential sector in a developing economy like Thailand. The external economic and noneconomic factors have substantial influence on the internal economic activities through this sector. The import and export sector, thus, is considered in detail.

Bearing in mind the above discussion, the econometric model for Thailand presented in this study is built. Attempts have been made to incorporate as many possible controllable policy instruments as the available statistical data permits. The emphasis is put on the supply side, i.e. production and exports. However, to explain the behaviour and the stability of the whole economy, consideration must also be given to the demand side, i.e. investment, consumption and imports. Emphasis is put equally on the fiscal and monetary sectors.

^{1/} Lawrence R. Klein, "What Kind of Macroeconometric Model in Developing Economies," *Econometric Annual of the Indian Economic Journal*, Vol. 13, No. 3, 1965, pp. 313-324

II. METHOD OF ESTIMATION

The model to be presented can be said to be nonlinear in variables but linear in parameters in the sense that many of the jointly determined endogenous variables are known as transformed functions of the original variables. The linearity in parameters makes the estimation problem simple and the ordinary least squares (OLS) can be applied easily. However, the well-known classical ordinary least squares bias and inconsistency make this method less attractive in a simultaneous system. Many other methods, for example, can be used so that the consistent estimates are obtained. The single equation two-stage least squares seems to be the most widely used. However, when the two stage least squares is applied to this model, two problems arise. The number of the predetermined variables included in the model exceeds the size of the available sample. Therefore, we do not have enough degrees of freedom to compute \hat{y} in the first stage of this method. Secondly, when many predetermined variables are included in the system there may exist a strong multicollinearity between or among the predetermined variables, so that the estimation of \hat{y} breaks down. If the multicollinearity is not exact but nearly so, the estimation will be imprecise. These problems are handled in this model by using the principal components of all predetermined variables in the first stage to compute \hat{y} .^{2/}

The equations of the model are as follows. The symbols used are defined after the equations and subsequently the equations are briefly discussed. The method of estimation used is indicated, in each equation, under the dependent variable. The figures in parentheses under the estimates are student statistics.

III. AN ANNUAL MACROECONOMETRIC MODEL FOR THAILAND

		\bar{R}^2	\underline{d}	\underline{F}
Production				
<i>Rice Production</i>				
1.	$\ln X^r = -3.74 + 0.91 \ln L^{cr}$ TSPC $+ 0.35 \ln (K_{-1}^a \cdot \frac{L^{cr}}{L}) - 0.08 \ln W$ (- 0.9) (1.9) (3.9) (- 1.5)	0.91	1.42	50.34
<i>Other Agricultural Production</i>				
2.	$\ln X^{ao} = 7.97 + 0.21 \ln (K_{-1}^a \cdot \frac{L^{oc}}{L}) - 0.04 \ln W$ TSPC (39.8) (8.6) (- 0.9)	0.83	0.47	36.38
<i>Manufacturing Production</i>				
3.	$X^m = 4864.67 + 0.35 K_{-1}^m$ OLS (11.1) (26.3)	0.97	0.57	165.50
<i>Service Production</i>				
4.	$X^s = 9922.64 + 0.34 K_{-1}^s + 0.32591 t$ OLS (14.5) (10.8) (1.7)	0.99	2.62	1242.2

^{2/} Detailed treatment of the principle of the statistical estimation of simultaneous systems by two stage least squares with the help of principal components can be found in Phoebus J. Dhrymes, *Econometrics: Statistical Foundations and Applications*, New York, Harper and Row, 1970.

\overline{R}^2 \underline{d} \underline{F}

Land Under Cultivation

Land Under Rice Cultivation

5. $L^{cr} = 5839.81 + 5932.90 \left(\frac{P^r}{P}\right)_{-1} + 129.48 \overline{YLD}^r$ 0.70 2.07 20.68
 OLS (1.1) (1.4) (4.9)

Land for Tappable Rubber

6. $L^t - L^t_{-1} = 197.96 + 19.16 \left(\frac{P^{rub}}{P}\right)_{-3} + 20.01 \frac{P^{rub}}{P}$
 TSPC (- 1.51) (1.76) (1.01)
 $+ 2.77 \overline{YLD}^{rub} + 0.44 (L^t_{-1} - L^t_{-2}) + 391.68 D_{66}$ 0.99 1.9 354.3
 (1.79) (8.17) (21.94)

Other Agricultural Production

7. $L^{oc} = - 5541.72 + 2285.19 \left(\frac{P^{oa}}{P}\right)_{-1} + 0.32 \overline{YLD}^{ao}$
 OLS (- 1.0) (0.5) (0.6)
 $+ 0.87 K^a_{-1}$ 0.98 1.6 687.1
 (11.4)

Consumptions

Private Consumption

8. $\frac{C^p}{N} = - 72.79 + 0.50 [X - D_p - \frac{Y^g}{P}] / N + 0.48 \left(\frac{C^p}{N}\right)_{-1}$ 0.95 2.90 157.1
 TSPC (- 0.7) (3.5) (2.5)

Government Consumption

9. $C^g = - 224.84 + 0.64 \frac{Y^g}{P} + 0.21 C^g_{-1}$ 0.99 1.81 856.9
 TSPC (- 1.2) (5.7) (1.2)

Depreciation

10. $Dp^m = 0.03 [K^m_{-1} + (I^{pm} + I^{gm}) / 2]$ 0.97 0.14 15.4
 TSPC (35.1)

11. $Dp^s = 0.03 [K^s_{-1} + (I^{ps} + I^{gs}) / 2]$ 0.96 0.13 15.4
 TSPC (33.9)

12. $Dp^a = 0.03 [K^a_{-1} + (I^{pa} + I^{ga}) / 2]$ 0.90 0.38 14.6
 TSPC (22.5)

Investments

Private Investment in Agricultural Sector

13. $I^{pa} = - 1640.81 + 0.03 (X^a - X^a_{-1}) + 0.20 CRCB/P^i$
 TSPC (- 2.7) (1.4) (23.2)
 $+ 1800.29 (P^a_{-1} / P^i)$ 0.98 2.00 244.2

Private Investment in Manufacturing Sector

14. $I^{pm} = - 3.99 + 0.32 (X^m_{-1} - X^m_{-2}) + 0.32 CRCB/P^i$
 TSPC (- 0.02) (2.5) (2.5)
 $+ 0.48 I^{pm}_{-1}$ 0.98 2.68 289.6
 (2.1)

			\bar{R}^2	\underline{d}	\underline{F}
<i>Private Investment in Service Sector</i>					
15.	I^{PS}	$= -375.3 + 0.51 (X^S - X_{-1}^S) + 0.78 \text{ CRCB/P}^i$	0.97	2.1	300.9
	TSPC	(- 0.9) (1.0) (5.4)			
Imports					
<i>Imports of Consumer Goods</i>					
16.	$\frac{M^c}{p^m}$	$= 6753.8 + 0.03 (C^P + C^g) - 3530.2 \frac{p^m (1 + t^{mc})}{p^c}$	0.95	1.6	151.4
	TSPC	(2.0) (2.1) (- 1.7)			
<i>Imports of Raw Materials</i>					
17.	$\frac{M^r}{P}$	$= 3315.34 + 0.35 X^m - 3562.41 \frac{p^m (1 + t^{mr})}{P}$			
	TSPC	(0.8) (3.4) (- 1.4)	0.98	2.4	226.5
		$- 0.28 (\frac{M^r}{p^m})_{-1}$			
		(- 1.2)			
<i>Imports of Capital Goods</i>					
18.	$\frac{M^k}{p^m}$	$= 484.8 + 0.55 (I^{pa} + I^{ga} + I^{pm} + I^{gm} + I^{ps} + I^{gs})$			
	TSPC	(2.6) (5.8)			
		$- 0.68 (\frac{M^k}{p^m})_{-1}$	0.99	1.8	634.9
		(- 2.2)			
<i>Imports of Services</i>					
19.	M^s	$= 47.9 + 0.03 (M^g + E^g) + 1.27 \text{ USTPV}$			
	TSPC	(0.3) (1.9) (2.4)			
		$+ 0.51 M_{-1}^s$	0.97	2.6	163.1
		(3.1)			
Exports					
<i>Rice Exports</i>					
20.	$\frac{E^r}{p^{Er}}$	$= 3269.6 + 40.21 M^{Ar} - 3526.79 \frac{p^{Er\$}}{p^{ErB\$}}$			
	OLS	(2.9) (3.2) (- 3.3)			
		$- 7.95 E^{USr} + 525.62 D^{vw*}$	0.53	1.04	6.6
		(1.3) (1.0)			
<i>Rubber Exports</i>					
21.	$\ln (\frac{E^{rub}}{p^{Erub}})$	$= -0.79 + 0.23 \ln (\frac{p^{Erub}}{P})$			
	TSPC	(- 0.9) (1.6)			
		$+ 0.84 \ln L^t + 0.38 \ln W^{drub}$	0.88	1.60	38.9
		(4.1) (1.0)			

		\bar{R}^2	\underline{d}	\underline{F}
<i>Tin Exports</i>				
22.	$\frac{E^{tin}}{P^{E^{tin}} TSPC} = - 556 + 4.41 W^{dtin} + 707.5 \frac{P^{wtin}}{P^{man}}$	0.45	1.55	7.6
	(- 1.5) (1.3) (3.0)			
<i>Other Agricultural Exports</i>				
23.	$E^{ao} = - 1365.9 + 43.02 JF + 1290.89 D_{65-6}$	0.93	2.63	102.8
	OLS (- 4.0) (12.4) (4.1)			
<i>Exports of Manufactured Goods</i>				
24.	$E^{man} = - 634.8 + 11.03 WT + 0.42 E_{-1}^{man}$	0.92	2.5	96.7
	OLS (- 2.7) (3.0) (1.7)			
<i>Service Exports</i>				
25.	$E^s = - 516.3 + 0.07 (M^g + E^g) + 0.35 E_{-1}^s$			
	TSPC (- 1.9) (4.2) (5.9)			
	+ 8.45 USTPV	0.99	2.0	1147.8
	(9.7)			
<i>Fiscal and Monetary Sector</i>				
<i>Direct Taxes</i>				
26.	$T^d = - 320.0 + 0.02 Y$	0.99	1.9	2238.9
	TSPC (- 11.4) (47.3)			
<i>Other Indirect Taxes and Revenues</i>				
27.	$T^{oidr} = - 1561.1 + 0.08 Y$	0.99	1.6	1385.7
	TSPC (- 9.4) (37.3)			
<i>Demand for Currency</i>				
28.	$CC = 375.2 + 0.07 Y + 3265.70 \frac{Y^{na}}{Y}$	0.99	1.1	673.3
	TSPC (0.2) (16.3) (0.97)			
<i>Demand for Demand Deposits</i>				
29.	$DD^P = - 792.8 + 0.07 Y + 3.41 CBO$	0.99	1.4	1060.8
	TSPC (- 6.1) (15.9) (3.0)			
<i>Demand for Time and Saving Deposits</i>				
30.	$TSD^P = - 12652.4 - 16730.37 D_{62} + 0.14 (Y - D_p - Y^g)$	0.99	1.7	755.4
	TSPC (- 3.1) (- 8.8) (3.5)			
	+ 0.32 (Y - D_p - Y^g). D_{62} + 13850.72 (\frac{Y^{na}}{Y})			
	(8.0) (1.8)			
<i>Credit from Commercial Banks</i>				
31.	$CRCB = 2707.0 + 0.94 (TSD^P + TSD^{CB} + TSD^g)$			
	TSPC (2.4) (13.9)			
	+ 0.40 (DD^P + DD^{CB} + DD^g) - 182.50 DCRT			
	(2.7) (- 1.7)			
	- 8263.8 RQRR - 0.77 CBGSEC	0.99	2.4	2301.2
	(- 2.5) (- 6.6)			

		\bar{R}^2	\underline{d}	\underline{F}		
Prices						
<i>Consumer Price Index</i>						
32.	P^c	=	$0.40 P + 0.62 P_{-1}^c$	0.96	1.6	349.9
	TSPC		(3.4) (5.1)			
<i>Implicit Deflator for Investment Goods</i>						
33.	P^i	=	$0.43 P + 0.56 P_{-1}^i$	0.78	2.0	39.2
	TSPC		(2.2) (2.7)			
<i>Implicit Deflator for Manufactured Goods</i>						
34.	P^{man}	=	$0.74 P + 0.24 P_{-1}^{man}$	0.92	1.2	178.0
	TSPC		(3.8) (1.2)			
<i>Implicit Deflator for Services</i>						
35.	P^s	=	$2.1 + 0.86 P + 0.13 P_{-1}^s$	0.98	1.4	318.5
	TSPC		(0.5) (4.7) (0.7)			
<i>Implicit Deflator for Other Agricultural Goods</i>						
36.	P^{ao}	=	$0.39 P + 0.64 P_{-1}^{ao}$	0.88	2.0	119.5
	TSPC		(1.7) (2.8)			
<i>Rubber Price Index</i>						
37.	P^{rub}	=	$- 8.6 + 1.08 P^{Erub} - 0.11 P_{-1}^{rub}$	0.85	0.49	51.0
	OLS		(- 0.7) (8.9) (1.6)			
<i>Rice Price Index</i>						
38.	P^r	=	$- 90.7 + 1.63 P + 0.35 P^{Er} (1 - t^{Er})$	0.78	1.5	29.9
	TSPC					

Identities

Real Gross National Product

$$39. X = X^r + X^{rub} + X^{ao} + X^m + X^s + X^f$$

Real Agricultural Production

$$40. X^a = X^r + X^{rub} + X^{ao}$$

Real Rubber Production

$$41. X^{rub} = \frac{E^{rub}}{p^{Erub}} + \Delta STK^{rub}$$

Gross National Product

$$42. Y = PX = P^r X^r + P^{rub} X^{rub} + P^{ao} X^{ao} + P^{man} X^m + P^s X^s + Y^f$$

Agricultural Production

$$43. Y^a = P^a X^a + P^r X^r + P^{rub} X^{rub} + P^{ao} X^{ao}$$

Non-agricultural Production

$$44. Y^{na} = P^{man} X^m + P^s X^s$$

Merchandise Imports

$$45. M^g = M^c + M^r + M^k$$

Merchandise Exports

$$46. E^g = E^r + E^{rub} + E^{tin} + E^{ao} + E^{man}$$

Capital Stock in the i-th Sector

$$47. K^i = K_{-1}^i + I^{pi} + I^{gi} - D_p^i \quad i = a, m, s$$

Imports Taxes

$$48. T^m = t^{mc}M^c + t^{mr}M^r + t^{mk}M^k$$

Rice Premium and Rice Export Duties

$$49. T^{Er} = t^{Er}E^r$$

Government Revenues

$$50. Y^g = T^d + T^m + T^{Er} + T^{oidr} + T^{Eo}$$

Implicit Deflator for Agricultural Products

$$51. P^a = (P^rX^r + P^{rub}X^{rub} + P^{ao}X^{ao}) / X^a$$

Implicit GNP Deflator

$$52. P = \frac{MY^s - (375.18 - 792.83) - 3265.70 \frac{Y_{na}}{Y}}{(0.07 + 0.07) X}$$

Changes in Money Supply

$$53. \Delta MY^s = \Delta CRCB + \Delta R^f - \Delta TSD + \Delta GBOT + \Delta CBSEC - \Delta TSD^g - \Delta DD^g - \Delta KAC + OTHERS + ERRS$$

Changes in Official Foreign Exchange Reserves

$$54. \Delta R^f = E - M + A^f + NB^f + KI^f + ERRS$$

LIST OF VARIABLES

- A^{f*} = foreign aid and grants, mb
- C^p = private consumption, 1962 constant million baht (cmb)
- C^g = government consumption (cmb)
- CBO* = Commercial bank branches outside Bangkok-Thonburi
- CBGSEC* = government securities held by commercial banks, million baht (mb)
- CC = Currency in hand of public, mb
- CRCB = credit from commercial banks, mb
- D_p = depreciation, cmb
- D_p^a = depreciation in agricultural sector, cmb
- D_p^m = depreciation in manufacturing sector, cmb
- D_p^s = depreciation in service sector, cmb
- DD^p = private demand deposits, mb
- DD^{cb*} = inter-bank demand deposits, mb
- DD^{g*} = government demand deposits, mb
- D^{VW*} = Vietnam war dummy, 1965—1969 = 1, otherwise = 0
- D₆₂^{*} = dummy variable, 1962—1969 = 1 otherwise = 0
- D₆₅₋₆^{*} = dummy variable, 1965—1966 = 1 otherwise = 0
- D₆₆^{*} = dummy variable, 1966—1969 = 1 otherwise = 0
- DCRT* = discount rates
- E = exports of goods and services, mb

E^g	= total merchandise exports, mb
E^r	= rice exports, mb
E^{rub}	= rubber exports, mb
E^{tin}	= tin exports, mb
E^{ao}	= other agricultural good exports, mb
E^{man}	= manufactured good exports, mb
E^s	= service exports, mb
E^{USr^*}	= the U.S. rice export quantity index, 1962 = 100.00
$ERRS^*$	= errors and omissions, mb
$GBOT^*$	= government borrowing from central bank plus changes in the treasury cash balance, mb
I^{ga^*}	= government investment in agricultural sector, cmb
I^{gm^*}	= government investment in manufacturing sector, cmb
I^{gs^*}	= government investment in service sector, cmb
I^{pa}	= private investment in agricultural sector, cmb
I^{pm}	= private investment in manufacturing sector, cmb
I^{ps}	= private investment in service sector, cmb
JF^*	= Japanese food industrial index, 1962 = 100.00
K^a	= capital stock in agricultural sector, cmb
KAC^*	= changes in commercial banks' account, mb
KI^{f^*}	= net capital inflows including net transfer payments, mb
K^m	= capital stock in manufacturing sector, cmb
K^s	= capital stock in service sector, cmb
L	= total land under cultivation, 1,000 <i>rai</i>
L^{cr}	= land under cultivation for rice production, 1,000 <i>rai</i>
L^t	= area for tappable rubber, 1,000 <i>rai</i>
L^{oc}	= land under cultivation for other agricultural production 1,000 <i>rai</i>
M	= imports of goods and services, mb
M^g	= total merchandise imports, mb
M^c	= import of consumer goods, mb
M^r	= import of raw materials, mb
M^k	= import of capital goods, mb
M^s	= import of services, mb
MY^s	= money supply, mb
NB^{f^*}	= net government borrowing from abroad, mb
$OTHER^*$	= other items, mb
R^f	= changes in official foreign exchange reserves, mb
$Toidr$	= other indirect taxes and revenues mb
T^m	= import duties, mb
T^Er	= rice export taxes, mb
T^{Eo^*}	= other export taxes, mb
t^{mc^*}	= tariff rate for consumer goods
t^{mr^*}	= tariff rate for raw materials
t^{mk^*}	= tariff rate for capital goods
t^{Er^*}	= rice export duty rate
TSD^p	= private time and saving deposits, mb
TSD^{cb^*}	= inter-bank time and saving deposits, mb
TSD^g^*	= government time and saving deposits, mb
$USTPV^*$	= U.S. personnel in Vietnam, in thousand

W	= percentage of damaged land under cultivation for rice production
W ^{drub*}	= quantity index of world rubber imports, 1962 = 100.00
W ^{dtin*}	= quantity index of the world demand for tin, 1962 = 100.00
WT	= level of world trade (world imports) index, 1962 = 100.00
X	= real GNP, cmb
X ^r	= rice production, cmb
X ^{rub}	= rubber production, cmb
X ^{ao}	= other agricultural production, cmb
X ^m	= manufacturing good production, cmb
X ^s	= service production, cmb
Y	= GNP, mb
Y ^{f*}	= net income from abroad, mb
Y ^g	= government revenues, mb
Y ^{na}	= non-agricultural production, mb
Y ^r	= rice production, mb
Y ^{rub}	= rubber production, mb
Y ^{ao}	= other agricultural production, mb
Y ^m	= manufacturing goods production, mb
Y ^s	= service production, mb
YLD ^r	= expected yield per unit area in rice production
YLD ^{ao}	= expected yield per unit area in other agricultural production
YID ^{rub}	= expected yield per unit area in rubber production

Notes: Exogenous variables are indicated in this list by an asterisk (*).

cmb denotes constant million baht

mb denotes current million baht.

One acre is approximately equal to two and a half *rai*.

IV DISCUSSION OF THE EQUATIONS

Aggregate Supply

Aggregate supply in this model has been disaggregated into three economic sectors: the agricultural, the manufacturing and mining, and the service sectors. Three equations constitute the agricultural sector. One equation each constitutes the manufacturing and mining sector as well as the service sector. Production in these three sectors are added up to determine GNP.

Agricultural production functions are assumed to be either log linear or linear functions of production inputs, weather conditions and time trends. Labour input shows an inverse correlation with real production. Therefore, labour is assumed to have zero marginal productivity. The assumption that labour may not be a significant constraint to the level of production, especially in "self employed" agriculture in less developed economies may not be too misleading since the self employed sector (i.e. peasant agriculture in less developed countries) are characterized by surplus labour or unemployment and disguised unemployment, therefore, marginal productivity of labour in this sector may be driven to zero.^{3/} Furthermore, it has been claimed by some economists and agriculturalists,

^{3/} See for example, W. Arthur Lewis, "Economic Development with Unlimited Supply of Labour," *The Manchester School*, May 1954 Reprinted in A.N.A. Agarwala and S.P. Singh, ed., *The Economics of Underdevelopment*, New York, Oxford University Press, 1963, pp.400-449; Harvey Leibenstein, *Economic Backwardness and Economic Growth*, N.Y, John Wiley and Sons, 1957, pp. 58-76; Ragnar Nurkse, "Excess Population and Capital Construction," *Malayan Economic Review*, Vol. II, No. 2 Oct. 1957, pp.1-5

e.g. Behrman,^{4/} Mellor and Stevens,^{5/} that marginal productivity of labour in Thai agriculture is not significantly different from zero or may even be negative.

Land under cultivation except land for rubber trees is hypothesized to be a linear function of expected yields and expected real prices. The unobservable expected real prices are related to observable variables by using the Nerlovian adaptive expectation equation.^{6/} However, land under cultivation other than rice and rubber is assumed to be a function of capital stock in agriculture beside expected yield and prices. Scanning technique was employed, and it was found that perfect myopic expectation gives the best result.

Land for tappable rubber is specified in such a way that short-run and long-run responses can be seen. It has been found that time lag in the response takes three years.

Non-agricultural production functions are assumed to be functions of capital stock, labour input and time trends. However, labour input does not show appropriate correlation, therefore, it is dropped from the equations.

Aggregate Demand

Aggregate demand consists of consumption, net investment and depreciation. Consumption is disaggregated into private and government consumption. Private consumption is in per capita form and follows customarily permanent income hypothesis or the habit persistent hypothesis. The short run mpc is estimated to be 0.50 and the long run mpc is found to be 0.97. For the government, both short-and long-run mpc's, are found to be lower than the private mpc. Government investment is assumed to be exogenously determined. Private investment is disaggregated into three equations. The acceleration principle modified with source of funds and profitability theory is applied.

Foreign Sector

Imports of merchandise have been classified according to their final use, say, imports of consumer goods, raw materials and capital goods. Imports of services are treated separately. Demand for imported goods can be viewed as a certain group among other groups of consumer goods and thus can be derived from simple consumer behaviour theory. Demand for raw materials and unfinished goods is a derived demand. Most of them are used as industrial inputs and are therefore assumed to depend upon the level of industrial production. Similarly imports of capital goods are assumed to be a function of total real investment.

It has been found that the elasticities of the demand for imports of consumer goods and the demand for imports of raw materials with respect to import prices adjusted for tariff rates relative to domestic prices at means computed from the estimated equations are 1.05 and 1.31 respectively. Service imports are hypothesized to be a function of level of Thailand's international trade, number of US personnel in Indochina and lagged imports.

^{4/} Jere R. Behrman, "Significance of Intracountry Variations for Asian Agricultural Prospects: Central and Northeastern Thailand", *Asian Survey*, Vol. VIII, No. 3, March 1968, pp. 157-173

^{5/} John W. Mellor and Robert D. Stevens, "The Average and Marginal Product of Farm Labour in Underdeveloped Economies", *Journal of Farm Economics*, Vol. XXXVIII, No. 3., Aug. 1956, pp. 780-791

^{6/} Marc Nerlove, "*The Dynamics of Supply: Estimation of Farmers' Response to Prices*," Baltimore, The John Hopkins University Press, 1958, pp. 45-65

Exports of major items—rice, rubber, and tin—are explained independently. The remainder of the agricultural exports and exports of manufactured goods and services are added into this sector. Thai exporters are assumed to be price takers. Therefore, at a given level of demand for Thailand exported goods, supply elements would be major determinants. In addition, the market share principle is applied in case of rice exports. Exports of services are hypothesized to be a function of the level of foreign trade, number of American personnel in Indochina and lagged exports.

Fiscal Sector

Government revenue is disaggregated into direct taxes, import taxes, export taxes and other indirect taxes and revenues. The first and the last components are assumed to be dependent upon GNP. Import and rice export taxes are both treated nonstochastically as accounting identities, i.e.

$$T^m = t^{mc} M^c + t^{mr} M^r + t^{mk} M^k \quad \text{and}$$

$$T^{Er} = t^{Er} E^r$$

The export duties other than rice are treated as given because of their relatively insignificance.

Monetary Sector

The Demand for Money

The choice of a theory underlying the demand for money in a developing economy is still controversial. There are at least three basic theories purporting to explain the demand for money—the classical quantity theory, the Keynesian liquidity preference theory and Friedman's restatement of the quantity theory. The classical quantity theory with some modification and Friedman's concept of opportunity cost of holding money is used to test the demand for money relationship in this model. However, the classical quantity theory with the incorporation of monetization and banking facility improvement variables gives the best result. The ratio of non-agricultural output to GNP and the number of commercial bank branches outside Bangkok are used as proxies for the degree of monetization and the improvement in the commercial banking system.

The Demand for Time and Saving Deposits

Unlike demand deposits, time and saving deposits are held as of investment assets because they usually yield interest returns. Most of time and saving deposits would be expected to come from private savings. However, in the sample period interest rates on time and saving deposits are almost constant. Time and saving deposits, therefore, are functions only of disposable income and the pattern of income distribution among the urban and rural sectors. The proportion between non-agricultural output and GNP in current prices is used as a proxy for income distribution. A dummy variable is applied to handle the inconsistency of the definition of time and saving deposits used by the Bank of Thailand before and after 1962.

Credit from Commercial Banks

It is hypothesized that the demand for loans from the commercial banking system is always in existence and the availability of funds is the constraint. The commercial banks' credit is thus formulated as a supply-determined relationship, which is assumed to be a linear function of total time and saving deposits, demand deposits, discount rates, the required reserve ratio and the government securities held by commercial

banks. Government securities held by commercial banks can be regarded as an attractive and competitive earning asset since part of it can be counted as reserve.

Price Determination

There are several ways to determine prices; the most common practice in modelling is to determine the sectoral price first and then derive the general price level through current and real GNP. Another way is to determine the price of a *key* sector output first and other sectoral prices are expected to follow this *key* output price. What should be the *key* output, of course, depends upon the character and structure of the economy. In advanced industrial economies, the price of manufactured products may be the most important one that other prices tend to follow,^{7/} whereas in some developing economies where food is the major problem, prices of other commodities tend to follow the food price.

Price determination in this study is, however, different. The general price level, that is the implicit GNP deflator, is determined first and then sectoral prices are determined as a function of the overall price level and some other sectoral variables.

There are at least two further alternatives in determining the general price level. The first one is to relate the general price level to the wage rate or labour productivity by assuming a fixed proportion between the general price level and the wage rate. This method is often referred to as the markup theory of price determination.^{8/} The other approach is to explain the price level by relating it to the volume of money. This is the so-called "demand pull" or "quantity of money" approach. This alternative is adopted in this study. At any particular period of time the demand for money and the supply of money are assumed to be always in equilibrium. In this approach the price level will play the role as an equilibrating factor. Equating the demand for and the supply of money the general price level is automatically determined. This is analogous to the determination of price in a Walrasian commodity market. Most sectoral prices are hypothesized to be geometric distributed lag functions of the general price level. The domestic price of rubber, however, is assumed to follow the export price and its lag since all natural rubber produced is exported. Likewise, the domestic price of rice is a function of the general price level, the export price adjusted for export taxes and its own lag.

V PREDICTIVE PERFORMANCE OF THE MODEL

After the model is built, it has been solved dynamically by the "Gauss-Seidel" algorithm^{9/} to test the predictive performance of the model. Taken as a whole, the simulation solutions derived for 1953–1969 are fairly satisfactory. The predicted paths of both real and current GNP have 3.99 RMSPE,^{10/} 3.16 MAPE^{11/} and 3.69 RMSPE, 2.46 MAPE respectively.

^{7/} In the Wharton EFU Model, this approach is adopted. The wholesale price of manufactured products is determined first and then other prices are assumed to follow. See Michael K. Evans and Lawrence R. Klein, *The Wharton Economic Forecasting Model*, Philadelphia, University of Pennsylvania, Economic Research Unit, Department of Economics, 2nd, ed. 1968, pp. 33–38

^{8/} Gardner Ackley, *Macroeconomic Theory*, New York, MacMillan, 1961, pp. 452–459

^{9/} The detail treatment of the Gauss-Seidel Iterative technique can be found in Lawrence R. Klein, *An Essay on the Theory of Economic Prediction*, Chicago, Markham, 1971, pp. 89–99.

^{10/} RMSPE = Root Means Squares Percentage Errors.

^{11/} MAPE = Means Average Percentage Errors.

In the last period, the percentage error of real GNP is only 0.74. Some difficulties arise in producing good disaggregate predictions in the foreign sector particularly when exports are taken as endogenous variables. In spite of this fact, the model can predict aggregate imports and exports quite accurately. Aggregate merchandise imports and exports have 5.25 RMSPE, 4.03 MAPE, and 7.78 RMSPE, 6.34 MAPE respectively. This difference between aggregate and disaggregate foreign trade predictions may be due to the consequence of the compensating errors in the components. Among the export items, rice exports show a relatively low predictive power: 14.05 RMSPE, and 12.45 MAPE. The model fails to produce a high level of rice exports in 1965, a sharp increase of other agricultural exports in 1966 and of tin exports in 1967–1968, and a sharp decline in the exports of manufactured goods in 1962. The prediction does not show the increases of rubber exports during 1964–1965 and overpredicts the level of rubber exports in 1969.

On the current baht side of the model, the estimates are obtained by multiplying constant price quantities by the price indices. As described above, the general price level, the implicit GNP deflator, is determined first as the equilibrating factor of the demand for money and money supply. All other sectoral prices are specified to follow the general price level. Thus errors in the prediction of the general price level will be transmitted to the current price variables. The accuracy of the prediction of the general price level depends on the errors in almost all variables in the system, but especially in production, investments, credit and demand for money. There is a slight upward bias in the prediction of the general price level which may be the result of a slight downward bias in the predicted values of real GNP. The simulated path does not show the increase of the general price level in 1958, 1962 and 1969, and also overestimates the general price level during 1966–1968. However, the statistics (4.05 RMSPE and 3.72 MAPE) indicate that the predictions of this variable also should be satisfactory.

As for fiscal and monetary sectors, the model produces satisfactory predicted paths of government consumption and revenues, especially after 1960 for government consumption. The simulated values of government revenues are slightly overstated during 1963–1969 with an average error of 3.50 percent. The predictions of demand as well as time and saving deposits are quite accurate, particularly near the end of the sample period. The level of credit from the commercial banking system is also reasonably well predicted.

While some of the discrepancies between the predicted and the actual values are not negligible, the overall performance, in terms of the accuracy statistics as noted, appears to be satisfactory and encouraging. It is yet only a preliminary effort which can be considerably improved with the betterment in the availability and quality of statistical data and other information.

DEVELOPMENT PLANNING AND IMPLEMENTATION IN THAILAND

Phisit Pakkasem

I. THE EVOLUTION OF PLANNING IN THAILAND

Traditionally, major resource allocative decisions and related economic policy formulation centred in the Ministry of Finance. John Loftus, Economic Advisor to the Ministry of Finance, described the resource allocation in the public sector for economic and social development purposes as follows:

“...The absence of organized strength behind alternative schemes for economic development, that is to say, the absence of articulate opinion in support of one line of development rather than another... There was no inherent machinery for resolving conflicts between ministries for funds; with the result that no ministry get enough money to carry out the projects most urgently needed in the sector of economy for which it responsible.”^{1/}

On the basis of this statement, one can assume that there was no central mechanism for coordinating and planning resource use rationally. Despite the efforts to bring about some order, particularly in the allocation of public investments during the pre-plan period in the 1950's, the development efforts in Thailand continued to be unbalanced, uncoordinated, and without long-range direction.

Against this pre-plan decision making pattern, the idea of planned development, such as seemed to be the decision-making norm in most developing countries by the end of the 1950's was not present in the Thai approaches, development planning was slow to mature in the minds of the Thai political authorities.^{2/} There were many reasons for this. First, the Thai economy had been growing steadily with a relatively favourable land-tenure pattern and a good ratio of population to resource endowment; therefore, there was no apparent pressure or urgent need for long-range policies in resource allocation. Second, the so-called revolution of rising expectation which constituted an important socio-political forces for planned development in many developing nations in Southeast Asia, did not occur with such intensity in Thailand.

However, toward the end of the 1950's a small number of high officials visualized some long-range economic problems in Thailand. In addition, the aid-giving institutions continued to exert increasing pressure on the Thai Government to formulate overall development strategies and programme in order to mobilize maximum foreign assistance for implementing public development efforts. The International Bank for Reconstruction and Development, in its first overall assessment of the Thai economy, strongly recommended

^{1/} Thailand Economic Survey Group, “Report on Economic Development Plans,” Bangkok, Ministry of Finance, Mimeographed 1957, p. 11.

^{2/} Prayad Buranasiri and Snoh Unakul, “Obstacles to Effective Planning Encountered in the Thai Planning Experience,” *The Philippine Economic Journal*, Vol. IV, August, 1965, p. 336.

the establishment of a development planning functions and a central machinery at the national level for dealing with long-term development planning in Thailand. Moreover, the IBRD's report also pointed out a need for a reorganization of public administrative structure to suit the development implementation.

At the time this recommendation was made, the Government under the new leadership of Prime Minister Sarit Dhanarat announced immediately in October 1958 that one of the top priority goals of his Government was to unfold a new economic development programme for the nation. The National Economic Development Board (NEDB), charged with central planning functions was created in July 1959.

The First Six-Year Plan (1961–1966) and Second Five-Year Plan (1967–1971) were formulated and implemented during the decade of the 1960's with the objective aiming at the overall economic expansion and better balance economic structure. Both Plans were basically a medium-term public expenditure programme to realize overall development objectives. They covered the public development outlays of the Central Government, foreign grants and loans. They had been concerned mostly with rehabilitation and expansion of the economic and social infrastructure. Major production and financial targets were established and development strategies, policies, programme and projects, designed to implement these targets, were outlined in the Plans.

The first Plan, had several technical weaknesses. The Plan, for instance, contained virtually no aggregate analysis. Its overall and sectoral targets were vague. Plan targets were at best projections of likely, and desirable, trends which seemed to correspond with the intentions of the planners. One of the key NEDB planners openly admitted then that "the final target was more a forecast than a target, the government was in no position to ensure that the entire programme set out would actually be implemented".^{3/} At the same time, certain substantive components were ignored, especially the regional and manpower implications of the Plan.

The Second Plan was formulated with considerable technical improvements compared to the First Plan. It emphasized spatially balanced growth and called attention to regional development programmes. The Second Plan also broadened its coverage to include manpower planning and private sector planning, and tested its aggregate projections for internal consistency and reasonableness by the use of macroeconomic models.^{4/} Its macroeconomic content was improved compared to the First Plan and served as a better frame of reference for sectoral planning and development policy formation. The plan size was also effected by resource availability and the absorptive capacity constraint of the public development administration system. The preparation of the Second Plan was, however, under many uncertainties during the latter part of the 1960's. The problems included a steep rise in the level of U.S. military expenditures in Thailand, sharp changes in prices of major Thai exports, and rising consumer prices. The economic climate of this period was thus conducive to the adoption of higher growth targets than the First Plan. Another significant innovation of the Second Plan period was the introduction of the annual planning process to draw up the Annual Operations Plan from 1968 onward in order to review and adjust the targets, programmes, and projects of the Plan in light of changing conditions.

^{3/} Snoh Unakul, *Fiscal and Monetary Policies and Thai Planning Process*, Bangkok, National Economic Development Board, 1971, Chapter 27.

^{4/} National Economic Development Board, "The Methodology for Preparing the Second Economic and Social Development Plan of Thailand," Bangkok, NEDB, Mimeographed, May 1967, p. 2.

There was a general consensus of opinion that both Plans had led to some improvement in resource allocation within the public sector. They brought to bear the existing development ideas of the public sector allocating the available public resources with a view to maximum coordinated achievement rather than simply curbing a wide variety of miscellaneous departmental demands. Since most of the public development projects had to be submitted through and evaluated by NEDB, a number of low-priority projects could be removed and public investments could be programmed within a longer-term perspective of development objectives. The basic task of rehabilitation and expansion of social overhead capitals was accomplished. The foundations for further growth and diversification of the Thai economy, on which current Third Plan (1972–1976) was to build on, had been laid under the first two Plans during the decade of 1960's. These were the real claims to success of the First decade of development planning in Thailand.

The current Third Plan (1972–1976) was prepared and launched when the Thai economy was undergoing a process of adjustment from rapid growth of the 1960's to a slow pace with a deteriorating external economic position. These depressive effects were amplified by pessimistic views of private investors due to uncertainty about future growth of the economy. The Third Plan has thus been designed to solve various economic problems that unavoidably arose in the late 1960's and early 1970's

The Plan emphasizes the need to achieve output and investment growth. One of the main targets is to achieve real GDP growth of 7 per cent a year from 1971 to 1976. The Plan regards the balance of payments as the main constraint on future growth and proposes a set of development strategies to relieve this constraint, namely further expansion and diversification of exports, checking import growth through various fiscal and monetary measures, and calling for larger increase in external capital inflows, both official and private. The Third Plan gives higher priority than the First and Second Plan did to agriculture and education. The emphasis on agriculture reflects the recognition of the sector's potential contribution to export diversifications and growth. Another closely-linked development objective of the Plan is to reduce spatial or regional income disparities between urban and rural areas, and between the Central and other lagging regions. This particular development objective calls for additional development expenditures on agriculture, education, and other social services that would directly benefit rural areas and outlying regions. The Plan also calls for the immediate need to improve and reorganize the public development administration, particularly to increase the effectiveness for plan implementation and supporting private efforts in development process.

In summary, two significant development occurred as a result of Thailand's development planning. The first was the creation of planning structure at the national level. The NEDB has become a new technical component of public policy decision structure and increasingly shared resource allocation power. Despite the efforts made in preparation of the first three Plans which involved a good deal of cooperation between NEDB and many sectoral ministries, overall policy agencies, and international aid donors, there is still room for improvement in development planning process. These include improvement of individual project preparation, intra and intersectoral planning, spatial aspect of planning, and planning in several critical areas of economic policy. The second was the explicit adoption of public policy objectives aimed at national development with better resource mobilization and allocation decisions.

OVERALL AND SECTORAL GROWTH TARGETS

	First Plan (1961-1966)		Second Plan (1967-1971)		Third Plan (1972-1976)	
	Target	Actual	Target	Actual	Target	Actual*
GROSS DOMESTIC PRODUCT (GDP) (%)	5.5	8.1	8.5	7.5	7.0	5.8
Agriculture	3.3	6.2	4.3	4.4	5.1	2.6
Mining and Quarrying	5.3	15.1	6.6	5.6	6.0	0.1
Manufacturing	9.3	11.1	10.9	10.1	8.0	8.0
Construction	3.9	12.8	11.4	4.7	6.5	1.9
Electricity and Water Supply	16.4	22.3	18.0	22.4	15.0	15.3
Transportation and Communication	9.3	6.1	11.0	7.2	6.0	6.1
Wholesale and Retail Trade		8.1	8.4	9.1	7.0	10.1
Banking, Insurance and Real Estate		15.8	17.0	15.4	15.0	10.8
Ownership of dwellings	5.4	3.1	5.0	4.2	2.5	3.3
Public Administration and Defence		5.4	12.0	9.5	6.0	4.4
Services		7.9	9.5	7.8	7.0	6.2

*1972-1973

II. SIZE OF THE PLANS AND SECTORAL PRIORITIES

In order to achieve multiple development objectives, growth targets, and to implement the public development programmes, it is expected that in the current Third Five-Year plan 100 billion Baht of public development expenditures would be required as against 65 billion Baht in the Second Plan, and 32 billion Baht in the First Plan. In determining the size of the Third Plan, which is triple that of the First Plan, due consideration has been given both to the expected availability of financial resources and the capital-absorptive capacity of the public sector for effective implementation. This amount covers capital and current expenditures of the central government, local authorities and state enterprises on programmes and projects included in the Plans. Based on the experiences of the first two Plans, the overall size of development expenditures seemed to be within the Thai Government ability to mobilize sufficient resources from public saving as well as non-expansionary domestic and external sources. For the current Third Plan, the size of development outlays would also seem to be feasible if the Government raises sufficiently tax revenues and is capable to increase greatly mobilization of external resources. However, the level of public saving seems to remain low unless the nation's tax effort is increased and the growth of current spending is curbed, particularly for the security management.

From the First to the current Third Plans, the sectoral allocation of public development expenditures indicates a shift in the sectoral priority and emphasis from economic infrastructure to social sectors, whose combined share has increased from 28.5 per cent in the First Plan to 42.6 per cent in the Second and Third Plans respectively. Education has recently been given the highest share with one-third of the total outlays of the Third Plan, followed by transport and communication, urban and rural, and agriculture. Shifts in sectoral priorities have been in line with the shift of overall development objectives of the Plans. Public policy has become increasingly concerned with redistributive aspect and the issue of social justice in the process of national development.

PLANNED DEVELOPMENT EXPENDITURES & SECTORAL PRIORITIES

(Billions of Baht)

Sector	First Plan		Second Plan		Third Plan	
	Amount	%	Amount	%	Amount	%
Economic Sectors						
Agriculture	4.6	14.1	10.5	15.9	13.7	13.6
Industry & Mining	2.6	7.9	1.1	1.7	2.4	2.4
Transportation & Communication	10.2	31.4	17.1	26.0	19.5	19.4
Power	4.3	13.3	5.0	7.6	7.9	7.9
Sub Total	21.7	66.7	33.8	51.2	43.4	43.3
Social Sectors						
Social Development	5.5	16.7	1.9	2.9	2.7	2.7
Urban & Rural			8.4	12.8	14.9	14.9
Health	1.4	4.2	3.6	5.5	6.3	6.3
Education	2.5	7.6	14.1	21.4	32.9	32.8
Sub Total	9.4	28.5	28.0	42.6	56.9	56.7
Unallocated	1.5	4.8	4.1	6.2	—	—
Grand Total	32.6	100.0	65.8	100.0	100.3	100.0

III. FINANCING THE PUBLIC DEVELOPMENT EXPENDITURES

The choice of the growth targets of the three Plans had been based not only on the analyses of the past trends and potentials of the Thai economy but also on the resource bases, both domestic and external sources, which the Thai Government could mobilize for financing various public development programmes and projects included in the Plans. From the point of view of plan implementation the timely mobilization of financial resources to meet the envisaged target is as important as its required volume.

The performance of the first two Plans in resource mobilization had been relatively successful compared with most developing countries in the region. The sum total of financial resources mobilized for public development programmes and actually spent under the First and Second Plans was approximately 94,064 million Baht against the projected investment target of 98,259 million Baht. The shortfall in the financial implementation could be attributed to several factors, particularly those programmes and projects which involved external financing. This was due to relative slowness in concluding loan negotiations, the terms of certain bilateral foreign loans which became bottlenecks to the execution of some projects, and lengthy process of bidding and finalizing contract. However, a significant part of the shortfall was also due to the capital-absorptive capacity of the public sector. There were several changes and modifications of some projects and programmes because they were not properly formulated or phased with complementary projects, some were also badly mixed with complementary investments in both physical and human capital. In addition, the shortage of certain types of manpower and a lack of development oriented management competence in several key agencies of the Government contributed to the shortfall in financial implementation of the first two Plans.

PLANNED AND ACTUAL DEVELOPMENT EXPENDITURES

(Millions of Baht)

	First Plan (1961-1966)		Second Plan (1967-1971)		Third Plan (1972-1976)	
	Target	Actual	Target	Actual	Target	Actual ^{1/}
FINANCING:-						
Development Expenditure	32,468	27,682	65,791	66,382	100,275	34,800
- Domestic	21,830	20,029	50,438	57,135	83,345	30,149
- Foreign	10,638	7,653	15,353	9,247	16,930	4,651
Loans	7,186	4,772	10,608	5,465	11,930	3,141
Grants	3,452	2,881	4,745	3,782	5,000	1,510

^{1/} Period 1972-1973.

During the course of implementation of the first two Plans, there had been several administrative reorganizations and some improvements in the field of development administration, particularly in the areas of economic management, development policies and projects preparation, with the aim of improving the plan formulations and implementations. Latest administrative reorganization was in October, 1972 which was accompanied by strengthening of staff in such key ministries as agriculture, industry, and commerce. The Office of the National Economic Development Board (NEDB) has also been renamed as National Economic and Social Development Board (NESDB) and is now undergoing a drastic reorganization of its planning structure in order to meet the future planning functions and changing environment.

Another feature of development finance in Thailand is that the share of domestic financing has been much larger than external financing. In terms of total mobilization and use of resources, both domestic savings and capital formation required for plan implementation in Thailand were among the highest in Southeast Asia. The share of domestic financing in the first two Plans was about 82 per cent of the total actual development expenditures. The current Third Plan relies on slightly lesser share of external financing or about 17 per cent of the total outlays. Approximately 70 per cent of public development expenditures during the Third Plan would be financed by central budget appropriation, and 13 per cent by the current surpluses of local governments and state enterprises. It is clear that raising the required level of domestic financial resources would call for considerable fiscal efforts and political determination on the part of the Government.

For the external resource mobilization, the actual amount of foreign loans and grants mobilized and used in financing of the first two Plans fell short of their targets, in particular foreign loans actually disbursed amounted only 58 per cent of the Plans' projection, and grants received were 81 per cent of the amount envisaged in the Plans.

In absolute term, foreign financing required for the Third Plan is somewhat larger than the Second Plan, but as stated earlier, its share of total development outlays declines somewhat. The Third Plan's programme of external official borrowing was however, accepted as a reasonable estimate of requirements by the Consultative Group for Thailand in 1972. This programme originally calls for commitments of official loans totalling about US.\$ 596 million in 1972-1976. The build-up to this much high level

of commitments requires a considerable effort and continued improvements in project preparation. The Government is giving greater emphasis to foreign loan project preparation including feasibility studies in order that the delay in loan negotiation can be reduced. In addition to official borrowing from abroad, the Third Plan counts on official grants totalling nearly US.\$ 250 million. Priorities are given to education and agriculture.

IV. THE RECORD OF ACHIEVEMENT

4.1 Expansion of National Output

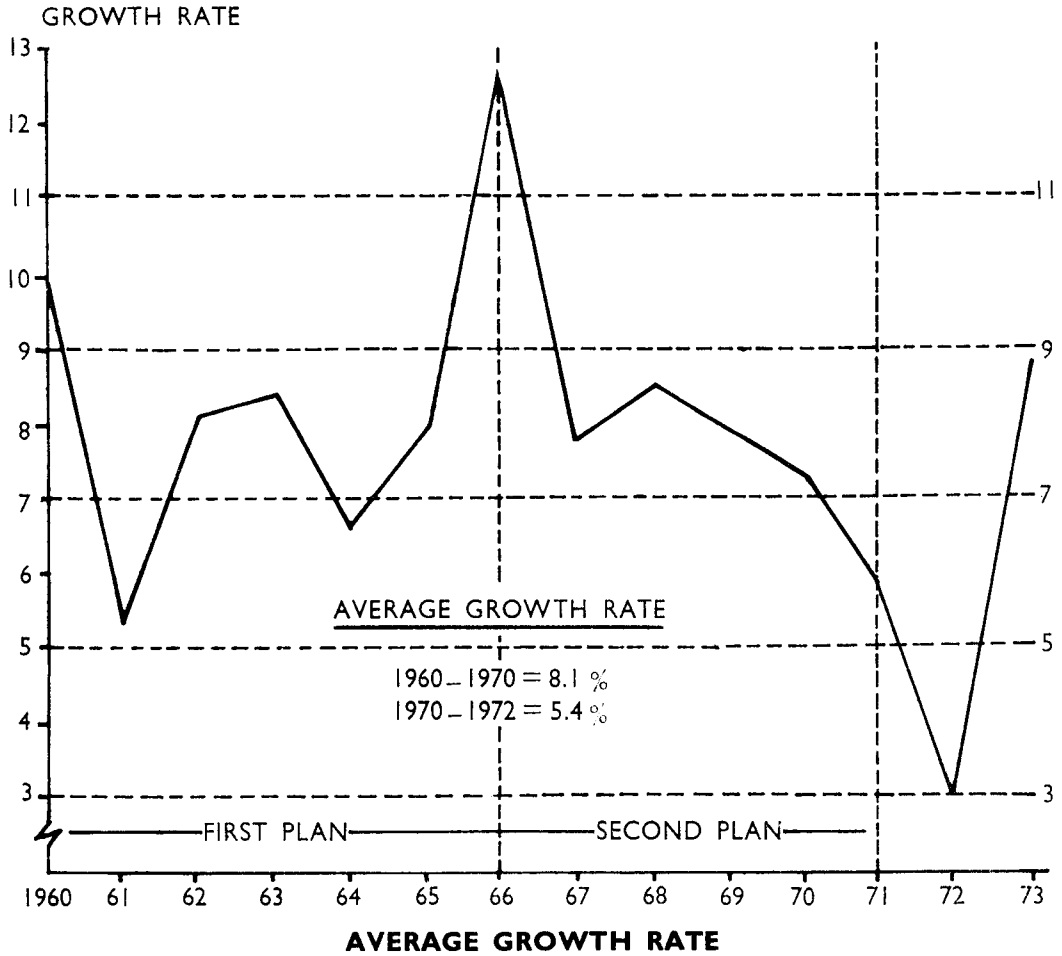
One obvious way of measuring the impact of planned development is to examine the degree to which national growth rate targets have been achieved. In reviewing the actual performance of the economy during the first decade of development planning, Thailand, with her first two Plans, experienced an impressive record of economic growth. Between 1961 and 1971, gross domestic product, at constant prices, grew on average by 8 per cent annually. The GDP over the First Plan period, 1961–1966, increased at an average annual rate of 8.1 per cent against the planned growth target of 5.5 per cent. For the Second Plan period the average growth rate was 7.5 per cent per annum which was slightly below the planned target of 8.5 per cent. Nevertheless this was among the highest sustained growth rate of national output in Southeast Asia. GDP doubled during the period from 59 billion Baht in 1961 to 127 billion Baht in 1971.

The pace of growth accelerated between the first and second halves of the 1960's. In 1966, for instance, the economy showed a rate of growth of 12.2 per cent reflecting a bumper crop of paddy, increase in public and private investment, and the rapid build-up in U.S. military expenditures in Thailand. From 1965 to 1967 in particular, invisible exports generated by direct and indirect U.S. military expenditures and private investment grew very rapidly. This large U.S. military expenditures in Thailand since 1965 had a noticeable impact not only on the overall growth rates but also on the composition of growth. Construction growth, for instance, reached 20 per cent in some years and average nearly 13 per cent in 1965–1969. Some of the service sectors also expanded faster than if demand had come entirely from domestic sources.

During the First and Second Plans' period, the Thai economy also experienced some structural changes. There had been a shift of production away from traditional agriculture toward industrial production, services and raw material exploitation. The share of agriculture in GDP had decreased from 37.4 per cent in 1961 to 29.8 per cent in 1971, while industrial production—manufacturing, construction, mining and quarrying, and electricity—had increased its share from 20.1 per cent to 26.2 per cent during the same period. On the expenditure side of the national accounts, there had been a gradual shift from consumption to investment. Investment had risen from 15 per cent of GDP, 1960–1962 average, to 24.4 per cent in the 1969–1971 period. On the whole, the Thai economy during the first two Plans period maintained a remarkably strong resource position. Particularly rapid growth of domestic savings and export earnings were conspicuous. In terms of financing its own growth, saving increased on average by 13.3 per cent and the average growth of exports of goods and services was more than 10 per cent per year in the 1960's.

From this aggregate analysis, recent growth in national output under Thailand's first two Plans seems to cast favourable light on the planning process. Undoubtedly, the accelerated growth of aggregate income and production was aided by rapid increase in public investment which was directed toward improving the country's basic economic

ECONOMIC GROWTH RATES



FIRST PLAN PERIOD

1961-1963 = 7.2 %

1964-1966 = 8.9 %

1961-1966 = 8.1 %

SECOND PLAN PERIOD

1967-1969 = 8.1 %

1970-1971 = 6.5 %

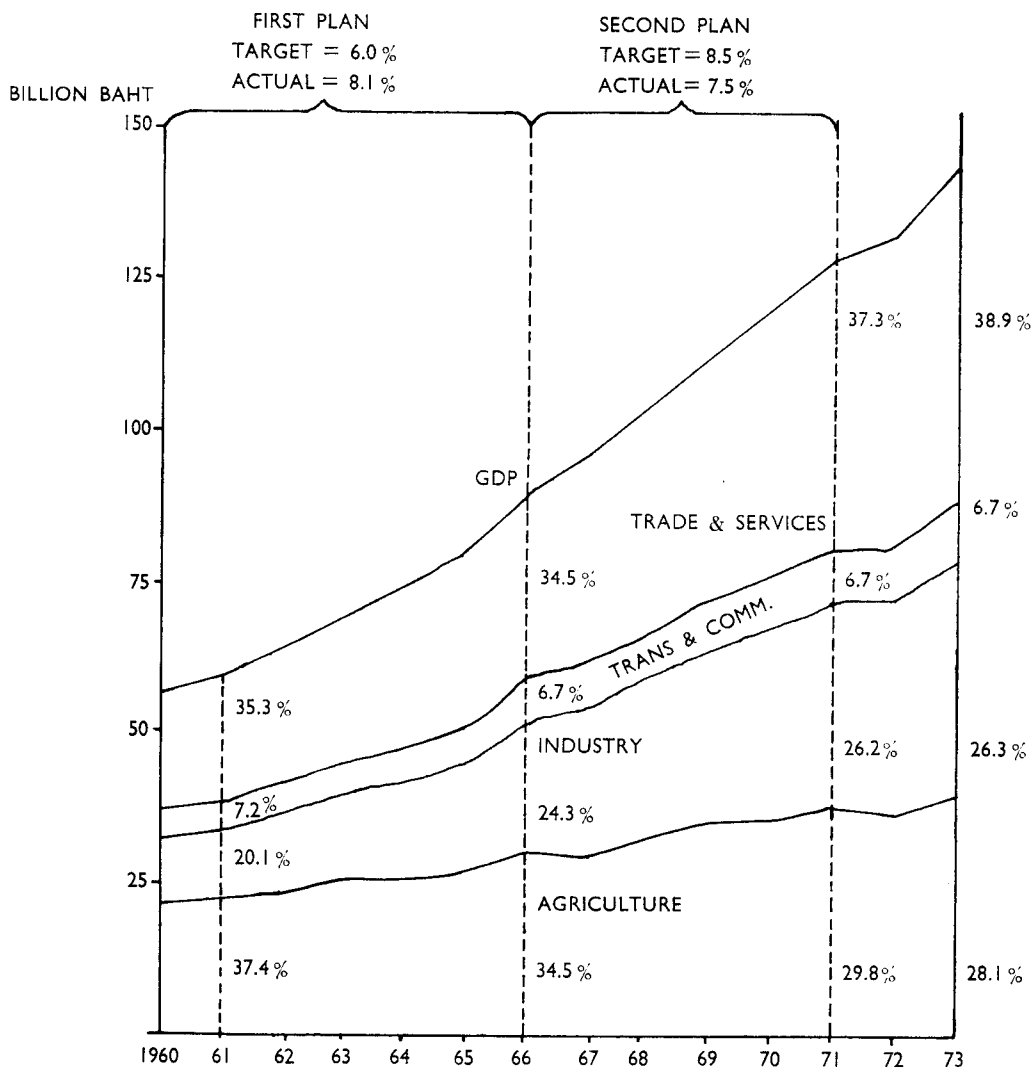
1967-1971 = 7.5 %

THIRD PLAN PERIOD

1972-1973 = 5.8 %

Source: NESDB, 1974

GDP BY SECTOR AT 1962 PRICES



AGRICULTURE

- CROPS
- LIVESTOCK
- FISHERIES
- FORESTRY

SERVICES

- BANKING
- WHOLESALE & RETAIL TRADE
- OWNERSHIP OF DWELLINGS
- PUBLIC ADMINISTRATION & DEFENSE
- SERVICES

INDUSTRY

- MINING & QUARRYING
- MANUFACTURING
- CONSTRUCTION
- ELECTRICITY & WATER SUPPLY

Source: NESDB, 1974

and social infrastructures. Both the World Bank and NEDB's evaluation of the two Plans gave credit to the Government for development a set of incentives in the use of modern inputs and appropriate mixture of private and public investments in several sectors. However, it is undeniable that other exogeneous factors—high levels of foreign capital inflows, external demands, and internal political stability—contributed significantly to the national economic growth which involved both change in the level and structure of national output.

However, Thailand began to experience a gradual slowdown of economic growth starting from 1969 to 1971. Real GDP growth had indeed slowed down from the growth rate of 7.9 per cent in 1969 to 5.8 per cent in 1971, and dropped down further to a growth rate of about 3 per cent in 1972. The economic slowdown was triggered by poor export performance and declines in U.S. military spending in Thailand from a peak level of equivalent to 4.5 per cent of GDP in 1968 to 2.8 per cent in 1971. These changes in exogeneous growth determinants affected the economy in many ways ranging from the sluggish domestic demand to the decline in private investment. By 1970 excess capacity became apparent, particularly in construction and manufacturing sectors. These depressive effects were amplified by pessimistic views of private investors due to uncertainty about the future growth of the economy. The Third Five-Year Plan (1962–1976) was thus prepared and launched during this period of adjustment and uncertainty.

But from mid-1972, an economic recovery has been underway triggered by steeply rising exports due to abrupt shifts from surplus to shortage on the world's markets for three Thai products, namely, rice, sugar and kenaf. In 1972, gross capital inflows have begun to rise again with the recovery of private investment. Investment expenditures began to rise and gain further momentum in 1973. Domestic demand began to pick up, and growth of national output has been around 8.7 per cent in 1973. With recent improvement in total output of the Thai economy, the outlook for the remaining period of the Third Plan seems to indicate that the Plan's target for GDP growth of 7 per cent is within reach,

4.2 Balance of Payments

A summary of balance of payments during the first two Plans period 1961–1971, given in the table below, shows clearly that Thailand had no significant deficit in the current account throughout the period. The net capital inflow into Thailand and continuously been in excess of the amounts required to finance the current deficit. The summation of the current deficits between 1961–1971 was US.\$1,486 million whereas Thailand obtained net capital inflows of US.\$1,855 million. As a consequence, foreign exchange reserves were strengthened to the extent that net capital inflows exceeded the deficit by over US.\$ 369 million. In 1971, total foreign exchange reserves of Thailand stood at US.\$ 722 million.

During the Second Plan period, the balance of payments deficit totalled US.\$ 127 million. The turning point in the balance of payments came in 1969 when foreign exchange reserves fell for the first time by about US.\$ 48 million, US.\$ 132 million in 1970, and US.\$ 17 million in 1971.

This was due to the combination of rapid growth of imports and sluggish merchandise exports. This weak performance in exports was due largely to a drop in rice exports coupled with substantial price reduction since 1969. Although some progress

GROSS DOMESTIC PRODUCT AT 1962 PRICES

(Millions of Baht)

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972 ^p	1973 ^e
Agriculture	22,062.6	23,688.7	25,796.9	26,123.2	27,060.8	30,785.3	29,904	32,799	35,257	36,174	38,112	36,929	40,136
Crops	16,317.0	17,673.5	19,301.9	19,146.4	19,580.8	23,056.2	21,033	22,856	24,542	25,139	26,658	24,812	27,343
Livestock	3,039.9	3,099.2	3,164.9	3,250.9	3,341.1	3,509.6	3,828	3,811	3,980	4,077	4,115	4,265	4,105
Fisheries	831.1	968.7	1,242.4	1,511.0	1,683.2	1,951.9	2,603	3,364	4,001	4,330	4,617	5,011	5,805
Forestry	1,873.6	1,947.3	2,087.7	2,214.9	2,455.7	2,267.6	2,440	2,768	2,734	2,628	2,722	2,841	2,883
Mining & Quarrying	659.0	755.7	807.8	941.0	1,193.3	2,417.8	1,572	1,733	1,810	1,792	1,862	1,794	1,857
Manufacturing	8,013.3	8,997.1	9,810.5	10,654.5	12,354.9	13,795.2	15,465	16,594	18,821	20,607	22,363	23,843	26,079
Construction	2,862.6	3,270.3	3,163.5	4,152.1	4,612.3	5,604.1	6,640	6,944	7,046	7,019	7,065	6,672	6,799
Electricity & Water Supply	325.9	377.6	386.0	477.8	608.7	809.2	1,051	1,441	1,556	1,865	2,222	2,602	2,952
Transportation & Communication	4,248.4	4,632.9	4,795.4	5,348.1	5,608.5	6,013.2	6,633	6,818	7,289	8,241	8,513	8,795	9,588
Wholesale & Retail Trade	9,471.7	9,897.6	10,883.2	12,094.8	12,823.5	14,132.5	16,686	17,722	18,754	20,995	21,862	23,636	26,517
Banking, Insurance and Real Estate	1,275.9	1,480.3	1,613.5	1,860.7	2,136.3	2,620.3	3,044	3,507	4,104	4,780	5,354	5,801	6,576
Ownership of dwellings	1,655.0	1,703.1	1,749.6	1,802.7	1,859.3	1,931.3	2,006	2,092	2,201	2,294	2,374	2,448	2,531
Public Administration & Defence	2,713.6	2,847.5	3,121.4	3,208.3	3,457.8	3,541.5	3,869	4,409	4,767	5,208	5,572	5,845	6,074
Services	5,742.2	6,142.2	6,547.5	7,029.7	7,771.1	8,509.2	9,266	10,227	10,941	11,753	12,427	13,256	14,018
Gross Domestic Product (GDP)	59,029.2	63,793.0	69,125.3	73,692.9	79,486.5	89,189.6	96,136	104,286	112,546	120,728	127,726	131,621	143,127
Growth Rate (%)	5.3	8.1	8.4	6.6	7.9	12.2	7.8	8.5	7.9	7.3	5.8	3.0	8.7

p: preliminary

e: estimated

FIRST AND SECOND PLAN'S BALANCE OF PAYMENTS

(Million US.\$)

	First Plan 1961-1966	Second Plan 1967-1971	Total 1961-1971
1. <i>Goods and Services</i>			
Receipts	4,040	5,609	9,649
Payment	4,354	6,781	11,135
Net Goods and Services	- 314	- 1,172	- 1,486
2. <i>Transfers, Net</i>	247	284	531
3. <i>Capital, Net</i>	404	559	963
4. Errors and Omissions, Net	159	202	361
5. <i>Change in Reserves</i>	496	- 127	369
6. Reserves Level at the End of Each Plan Period	849	722	

was made in export diversification, especially in crops, but this could not compensate the deterioration in rice exports. At the same time, in 1969, net capital inflows especially public capital inflows, began to decline and could not compensate the current account deficit. Reserves began to decline for the first time in 1969 through 1971.

The balance of payments improved again markedly from mid-1972 when the Third Plan was underway. This has been triggered by steeply rising exports which showed unexpectedly large increase by 32 per cent in 1972. The increases in exports were due mainly to special factors, namely the abrupt shifts from surplus to shortage on the international markets for three Thai products, namely rice, sugar and kenaf. Shift in world demand for these three commodities were accompanied by increases in both quantities and prices from 1972 onward.

V. PROSPECTS FOR THE PERIOD 1974 - 1976

A recent economic recovery in Thailand and the outlook for the remainder of the Third Plan period, 1974 - 1976, seem to indicate that the overall growth target of 7 per cent a year would be within reach. Although the growth potential of the Thai economy may exceed 7 per cent, this growth target has been chosen in order to attain reasonable growth path, but, at the same time, to bring about a more interregional balance in welfare in accordance with the Plan's emphasis on distributive aspect of development. However, Thailand's economic growth beyond 1974 will also be influenced by factors outside the control of Government, namely world price behaviour and energy crisis which already contributed to the increase in inflationary trend in Thailand. This would not only slow down rate of economic growth, but also lower Thailand's competitive position in the international market and affect the standard of living.

In general, the balance of payments will continue to be a major constraint to future GDP growth for Thailand. If recent improvement in balance of payments continues, foreign exchange reserves will probably stay above the Plan forecast. The Government will have to continue stepping up its efforts to promote investment and production for export, as well as proceed with various key policy reforms, especially in fiscal, monetary, and pricing policies. There is no doubt that a further acceleration of exports will depend on the already-mentioned external factors as well as Thai Government's own ability to institutionalize the policy changes. In addition, future political development and stability will play an important role for future prospects of Thailand to achieve various development objectives and continue with societal change.

REGIONAL PLANNING WITHIN A NATIONAL FRAMEWORK: THE CASE OF THAILAND'S NORTHEAST*

Phisit Pakkasem

I. NATIONAL DEVELOPMENT EFFORTS AND EMERGENCE OF REGIONAL ISSUES IN THAILAND

Like many Southeast Asian countries, public policy in Thailand has become increasingly concerned with development of subnational areas. This is due to the fact that the past record of national economic growth and upward change in level of aggregate income have tended to generate regional disparities in the level of economic welfare. This phenomenon in Thailand seems to confirm the theoretical proposition that when a nation achieves rapid economic growth, regional income inequality increases unless deliberate spatial reallocation of resources is implemented to redress the inter-regional imbalance. These regional gaps in economic development have even grown wider in recent years between the Northeast and Central regions of Thailand in particular. Thailand's development planning efforts in the 1960's, under the First and Second Plans, had been concerned almost exclusively with economic and social development at the national level. Any regional development implication was based on project selection at the national level rather than analysis of regional requirements.

The regional differences in level of welfare in Thailand have not only become an economic issue, but also have tended to aggravate political strain and security management problems for the Thai Government. This makes it economically as well as politically necessary for the Thai Government to adopt regional approach to planning in order to translate the national growth into increases in welfare of people living in the lagging regions of the country. Strong political pressure thus forces consideration of redistributive goal and spatial development as a new but necessary dimension of the current practice of national development process in Thailand whose economy is less integrated than several countries in Southeast Asia.

In the past, public policy makers who involved in national development process frequently gave lip services to some sort of regional income policy with a vague policy statement. In part this reflected the fact that regional planning as a new subfield of development planning in Thailand was not well understood among the policy makers, and was still evolving. Throughout the course of the First and Second Plans, regional planning had not developed, but it is only in the current Third Plan, that regional studies and planning activities begin to develop slowly at first, but has now quickly gained momentum. Regional planning interests begin to be seriously reflected in the current activities of the National Economic and Social Development Board (NESDB) itself. The NESDB, a central planning authority for Thailand, has been provided with foreign consultant services to conduct regional studies for the Northeast, North, and South regions by the USAID, UNDP, and the U.K. Government respectively in order to help the NESDB identify regional development issues and prospects.

* A paper presented to Southeast Asia Development Advisory Group, Seminar on Urban and Regional Planning at the De Soto Hilton Hotel, Savannah, Georgia, October 29-31, 1973

It is hoped that by the Fourth Plan period beginning 1977 regional planning should come into full play at least in the above-mentioned three out of six development regions of the country to serve as a guide to resource allocation and future national development efforts.

II. THAILAND'S NORTHEAST DEVELOPMENT

Thailand's Northeast may in many ways be considered the ideal prototype for studying of regional planning in Thailand for several reasons. First, it presents a complex development problem because it involves the issue of an underdeveloped region within an underdeveloped country. Northeast Thailand has the lowest per capita income in Thailand, at about half the national average, while the Central region where Bangkok is located has the highest per capita income, more than 60 per cent above the national average. Beside, per capita income in the Central region has definitely been moving upwards, while that of the Northeast has been declining. With a population of thirteen million and a separate ethnical tradition, Northeast Thailand is a distinct economic entity having a per capita income somewhat below that of the average for India which is one of the poorest countries in the world. Second, there is an increasing pressure in Thailand to start regionalization of planning in order to accelerate development of the Northeast for the security management reason. Third, Thailand's Northeast has received significant attention from the international aid and lending institutions, particularly the USAID and the World Bank. Fourth, Northeast was the first and most daring example of the Thai Government's new public policy for decentralizing economic development—programming for the region.

Northeast development efforts under the national planning framework in the 1960's were inadequate and offered an unsatisfactory solution to the deterioration of the position of the Northeast relative position to the rest of Thailand. The public development programmes and resources allocated to the Northeast have not produced much change in the structure of the regional economy. A series of ad hoc regional policy measures of short-term character, a public investment allocation pattern which was thinly scattered over a large area, and many so-called accelerated rural development programmes under the first two national Plans had proved to be ineffective either in promoting long-term regional growth or in reducing the regional income gaps. These approaches to regional development did not become an instrument for spatial coordination of public investment activities, or contribute to area development in terms of sound public policies. The Thai planners were unable to translate national economic growth into increase the welfare of the people living in the Northeast and to restructure new spatial relations for the region.

The past planning approaches had not been very successful in meeting the fundamental public policy goals to promote regional growth and structural change. This can be explained in part that the past regional development process did not employ any definite conceptual guidance that would enable the Thai planners and foreign donors to come up with better regional policies, strategies, and investment allocation patterns. Chronic economic imbalances such as that in the Northeast Thailand, must be remedied by public policies which attack fundamental causes rather than having superficial effects.

Thailand's Northeast experience is thus pertinent evidence. The growing concern with the inadequacy of regional planning within a national development framework during first two Plans' period had been well recognized by the Government and planning community in Thailand. This had finally led the Thai Government to launch the Northeast

regional studies and planning in 1968 as an important step in the initiation of regional planning. The Northeast Development Committee, chaired by the Deputy Prime Minister, was created and tried to establish a link between national development policies on the one hand and programmes of regional development on the other. But the results have been rather slow and frustrated. This has been partly due to the fact that regional approach to planning and regional strategies are still being evolved in the process of attempting to gain a better understanding of development issues and to map out better pattern of resource allocation for the Northeast.

As previously stated, a foreign planning advisory group was provided by the USAID to supply technical and advisory services to the Northeast Development Committee and its various planning subcommittees during the early phase of the Northeast planning activities, particularly to determine development strategies, resource requirements, and allocation patterns for the Northeast. In reviewing the major working documents, and the final reports and recommendations submitted by the consulting firm, their planning exercise appears to be only a regionalization of the national plan to serve as a guide to national planning. Their regional analysis and planning methodologies were based on the conventional sectoral approach, and tended to ignore the spatial dimension in their analysis and programming for the Northeast. Their recommended regional allocation pattern of public development expenditures for the Northeast was on a sectoral basis like the national plan and contained no locational or spatial criteria for regional policy. At the same time, there was no regional macro-framework to determine the size and location of public investment in the Northeast. This method of regional analysis and planning, commented by many experts, negates the whole basic concept of regional planning.

III. NEW APPROACH TO MEET REGIONAL DEVELOPMENT NEEDS FOR NORTHEAST THAILAND

A new approach toward regional analysis and planning for development of Thailand's Northeast is thus needed if regional growth and structural change are to be the ultimate public policy goals in regional development. Regional development and planning must take place within an appropriate conceptual framework capable of explaining and predicting regional structure and behaviour. A conceptual guidance would help determine regional development strategies, and priorities which can provide better criteria for resource allocation and spatial coordination of the multi-sectoral investments in the region.

However, several known theories of regional development and planning innovated by the regional science community in the economically advanced countries have not offered any instant solutions to regional problems in the developing countries. The bulk of academic literature on regional science remains mostly irrelevant for practical planning in Thailand. This may be shocking news, though most of my regional planning colleagues from Southeast Asia would probably agree with it. Regional planning always operates under serious constraints of data availability, professional skills, time, and funds. Complicated regional studies, while they may add prestige to the sponsoring institution, rarely yield results that are useful for the decisions which normally have to be made every day.

A country the size of Thailand with the total population of almost 40 million people would need at least 100 regional scientists and planners at the masters degree and doctoral levels to support the ongoing regional planning activities. At the presen

time, there are less than 10 persons with appropriate training in regional and urban planning, and it would take another decade to train the number we need. Experience in Thailand suggests that the greatest contribution on the part of regional science can be made when the institution building phase of regional planning is fairly well advanced and professional acceptance has to be gained.

However, in order to be effective in influencing policy, this small group of regional planners in Thailand must press for particular solutions. They must become involved in keeping the regional planning structure and process going, and must always be on the look-out for ways and means to get action. This lack of indigenous regional planning capability to initiate certain kinds of basic research using available regional data means that more foreign regional scientists are still needed during this initial phase to serve as planning advisors. This will not only provide for more rapid feedback from practice to theory, but will also provide a splendid opportunity for comparative and cross cultural research.

In searching for a new approach, there is no single theory or set of theories that could adequately explain the process of regional growth and development in the developing countries. Most of the known theories of regional planning have been developed as a response to the challenge of problems or regional development in industrially advanced economics where rich data sources could be mined and sophisticated models built without anyone seriously raising the question of immediate practicality. On the whole regional science continues to operate without the benefit of testing and application in planning. At the same time, several development and growth theories innovated in recent years for developing countries have been advanced for the study of problems at the national level. Consequently, there is a great lack of regional development concepts formulated with direct reference to the conditions and problems of developing countries.

Based on the current state of art in regional science, the Thai regional planners are faced with technical drawback in trying to find conceptual approaches that are readily translatable into planning exercise for the Northeast and other regions of the country. The question is then to what extent can the known concepts and frameworks be transferred and adapted to improve regional planning in Thailand? After a survey of literature on the subject and a series of empirical testings, there are some concepts which appear promising and which could be translated into planning models capable of yielding empirically testable propositions for Northeast planning purposes.

The concepts selected and used for the current Northeast planning exercises are the polarized growth model and the industrial structure model which are both intra-regional growth models emphasizing different growth determinants to hypothesize the followings:

The polarized growth model postulates that regional economic growth is spatially concentrated in development poles—major urban centres of the region—and eventually moves outward into periphery. Concentration of sources in growth poles or urban centres would result in higher productivity and rate of return on investment through agglomeration and external economies.

The industrial structure model facilitates examination of the relationship between regional growth and its industrial compositions. A better industrial mix component would have a preponderance of rapid rather than slow growth industries or sectors capable of producing self-sustaining growth in the region. A region's growth is thus explicable by its industrial structure.

The empirical applications of these models have put the Northeast growth process into a macro framework capable of explaining what happened to the region over the period 1960–1972. The applications of models have also integrated spatial consideration into the regional analysis to see how spatial structure influences regional growth path and how growth affects economic space in the Northeast in 1960's. An attempt has also been made to project the future growth of the Northeast through 1976 which appears to be deteriorating further with considerable increase in disparity in the 1970's. So deliberate regional development policies are being formulated by the Northeast Development Committee to strengthen the relative economic position of the Northeast.

The results of the applications of these two models indicate that the models are operational in the sense that they can yield statistically meaningful results when applied to Northeast regional data that are now available. Although the results of the polarized growth model, are not entirely conclusive, this seems to be the result of data deficiency rather than any basic weakness in the model. The value of the models lies also with their properties which provide spatial and sectoral determinants for viewing the Northeast economic structure and growth behaviour. They also give some insights as to how and where this growth can be accelerated through proper resource allocation and regional policies.

However, the results of the analysis are highly aggregate and, therefore, the measures of the relative importance of the determinants can only be approximate. But it is hoped that this type of planning exercise would stimulate interest of Thai regional planners in using regional models as a set of tools for regional analysis and planning under the existing availability of regional data in Thailand.

The models used in the current regional planning exercise are subject to certain limitations. First, the deficiencies in the regional data suggest the need for caution in interpreting the findings. Second, the models are partial in scope and technical in their characteristics and therefore overlook other equally important variables especially the sociopolitical and administrative dimensions of regional planning. Third, the explanatory power of the two models is weak, particularly the ability of the models to generate long-run forecasts is doubtful. The industrial structure model contains no behavioural parameters required for prediction. It is an identity with no behavioural implications. The polarized growth model shows very limited value for projection. Finally, the concept of polarization in economic development is still evolving.

IV. PROPOSED REGIONAL STRATEGIES AND POLICIES FOR THE NORTHEAST ACCELERATED DEVELOPMENT PLAN (1975–1976)

In light of the foregoing comments, the empirical results of the models have generated two development alternatives. First, the polarized growth model emphasizes the need to develop a number of regional growth poles for the Northeast on the basic preconceived role of accelerating regional development through urbanization. Second, the industrial structure of the region with a better industrial mix composed of rapid growth industries or sectors capable of producing self-sustaining growth for the Northeast. But these two strategy alternatives are, in a way, highly complementary to each other and can be simultaneously treated as inputs to produce joint development strategies for redevelopment of the Northeast.

There is a special interdependence of these two development strategies which can be pictured in the form of a matrix which integrates these two growth determinants and tries to see how they react on one another. In order to promote economic growth

for the Northeast, for instance, some combination of the above strategies can be encouraged that will restructure the regional industrial mix based on high growth industries, particularly those export-oriented sectors and agro-based industries which could be conducive to regional industrialization. These processing industries should be concentrated in specific location to bring about maximum agglomeration effects to the region. Regional growth poles can then play an important role as the urban economic base to process and service the output of the region. The types of processing industries and services located in each regional pole or urban centre must be considered in terms of their potential to improve industrial mix of its periphery as well as rural areas surrounding the sub-urban fringe.

In order to implement the above joint strategies for development of Thailand's Northeast, the following policy guidelines have been formulated for the Northeast Development Plan:

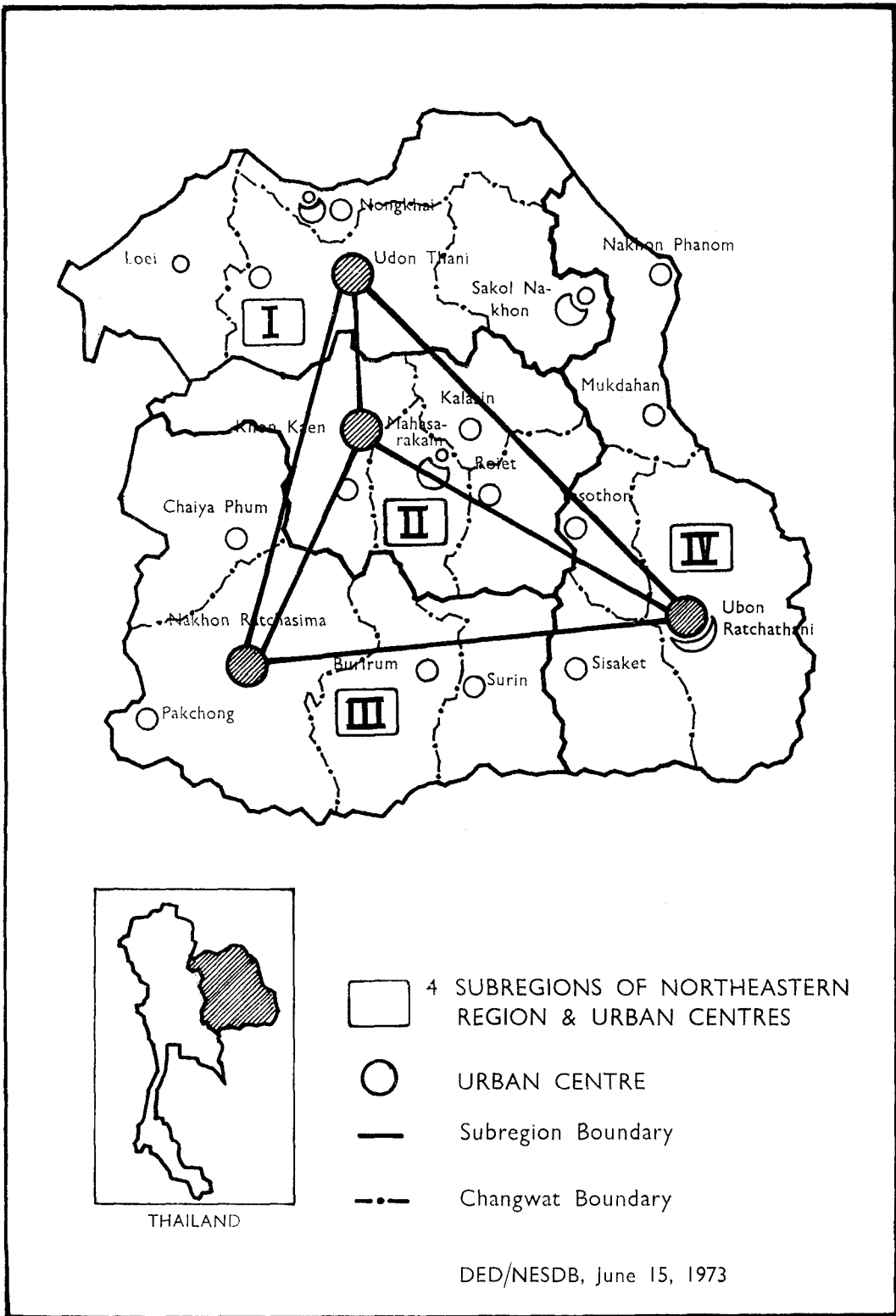
(1) Urbanization Policy through Development of Northeast Secondary Cities

Growth pole and urbanization policies for the Northeast have recently been formulated as a planned system of urban centres in the region. Four major Northeast changwats, namely Ubon, Korat, Khon Kaen and Udorn, have been selected as the growth centres to play a key role in extending development across entire region. The criteria for the selection of these growth centres are based not only on existing major urban areas but also on the fact that they could attract investment and diffuse the benefits of these investments most widely throughout the region in the future.

Based on the recent intra-regional trade flow analysis, these four urban centres have been playing as the important marketing and distribution centres for the Northeast Thailand. They already have some basic infrastructure which needs only marginal improvement to bring higher benefits to their respective subregions. Additional effort will be devoted to improve some urban infrastructure and certain type of investment in amenities in order to make these four cities relatively attractive to new industries and firms, especially the bigger and faster growth industries as well as processing the agricultural and raw materials that can be produced in the vast hinterland surrounding the pole changwats. They would provide efficient location for agro-industries and other industries with a view to changing the industrial structure of the Northeast economy.

The emphasis is given here to the development of secondary cities as the principal focus for a national regional policy in order to accelerate production and to absorb increasing agricultural unemployment in the lagging region, as well as to decentralize some of the industrial activities away from Bangkok area. Bangkok is now experiencing external diseconomies by upward shifting of the average-cost curves of most firms and industries expanding their activities in the area.

In the past, the first two national Plans had neglected almost completely the matter of urbanization in other regions outside of Bangkok. In fact, the past national infrastructure programmes, such as highway, improved telecommunication, Bangkok harbour and airport improvements, seem to strengthen the primate role of Bangkok as the outstanding industrial, commercial, financial, governmental, and cultural centre of Thailand. Thailand becomes truly a nation composed of small urban centres and villages which gravitate around a primate city of Bangkok. So the secondary city development policy aims to promote industrial decentralization and check excessive population flows into already over concentrated urban areas of Bangkok by building up new industries in a less developed region of the country.



(2) Regional Policy in Improving Industrial Structure

Several sectoral policies necessary for shifting the Northeast region away from a subsistence economy which is now based largely on a number of slow growth industries, particularly rice production, to a cash crop oriented economy and export oriented agro-industrial base. This will enable the Northeast to establish a better industrial structure and gain a more equitable share of agricultural and primary processing industries which are now concentrated mainly around Bangkok area.

Agricultural development policies in particular will be integrated with the policy of improving the industrial mix of the Northeast. Improvement of agriculture through crop diversification and intensified agricultural development in the major irrigated areas in the Northeast can be achieved by modern methods of production and better use of existing irrigation and extension services. These regional agricultural development programmes and projects are being prepared and proposed by the Thai Government to the World Bank for the IDA loans.

Industrial structure improvement policy aims also to develop agriculture-related industries emphasizing greater efficiency in primary processing industries. This agro-industrial sector appears to be most promising in improving the industrial mix of the Northeast. They can take advantage of a region's comparative advantages in low labour costs and locational advantages of being closer to the supply of raw materials. At the same time, concentration of agro-processing activities in Bangkok should be halted through a set of industrial location policies aimed at dispersion of industrial development and development of regional growth centres through urbanization policy.

Manufacturing and processing of other non-agricultural raw materials produced in the Northeast offers opportunities also for more rapid structural change and improving industrial mix. In the long run, non-agriculture production should overtake the agriculture-related production in order to improve the industrial structure of the region. Several sectoral and spatial policies as well as other physical infrastructure investment policies must be well coordinated.

(3) Integrated Rural-Urban Development Policy

Another regional issue of reducing rural-urban gap is the question of the interrelationships between rural or agricultural development and urbanization, and how to treat these interrelationships in regional development policy and planning process. There is almost no literature dealing directly with this topic. Most planners still have trouble to put down their experiences and to develop some kind of model in which they could organize their own thinking on the topic of rural-urban interdependence.

In the field of rural and agricultural development, regional planner is likely to find that his examination is greatly complicated by social history of the region. In the past, regional developments in Thailand, for instance, have tended to favour the rural rather the urban sectors of the region. The following rural infrastructure programmes have been instrumental in the attempt to produce the changes:—

- Construction of rural roads.
- Extension of public services to rural areas such as health and education services, agricultural extension and production credits, rural electrification, among others.
- Increasing incorporation of the rural population into local organizations; cooperatives and farmer associations.

In spite of the fact that these development programmes have been operating for some time, the progress made has been uneven. Only a fraction of the rural population in the Northeast has been touched. Transition of these rural areas to urbanism has not occurred. This extreme slowness by which urbanizing forces have taken hold with the Northeast countryside has divided rural and urban life in Thailand.

Such rural development programmes thus can no longer be treated independently from regional urban development programmes if a primary objective of regional development is to close the level-of-living gap between them. Rural development policy through transforming agricultural areas into the integral parts of the regional market economy will have to display an integration of the rural and urban development programmes in the region.

Several studies have shown that there is a close correlation between commercial farming, agricultural prosperity, and urban development. Agricultural production will be strongly influenced by the location and development of the major growth centres in the region – the growing urban market as well as development of agro-industries in the major urban centres. At the same time, rural and urban developments need to proceed *pari passu* if severe demographic and economic imbalances prevail in the region. But regional planners in Southeast Asia may find themselves working with two conflicting policy objectives; agricultural and rural developments demand acceleration of rural out-migration; but the prevalent goals for urban development may require the braking of urban in-migration.

In Thailand, agriculture is the key to solving the problems of economic and social development both at the national as well as subnational levels. Agricultural development can serve as a starting point in rural and eventually urban developments in regional planning. The Thai regional planners are thus faced more and more with the necessity to achieve a complete integration of agricultural, rural, industrial, and urban development policies. This approach in regional planning is justified by the fact that economic development in several developing countries has occurred in a rural-urban matrix. The development in a unitary and coordinated fashion of rural and urban policies is considered a fundamental principle of regional planning.

V. CONCLUSION

Regional planning in Thailand is at a crucial crossroad. Public policy makers as well as planners in Thailand have realized that regional development problems can be shelved only at the cost of potential violent agitations whose cumulative effects may be so far reaching as to undo all that the country has achieved during the last decade. They have also painfully recognized that the past national development policies and programmes are not only inadequate to meeting growing regional challenge but also are instrumental in creating new problems.

The revision and adoption of new policies are thus necessary and would test their impact not only on the Northeast, but most probably for other regions in Thailand. The major regional policy areas singled out for attention in this paper are rural, urban, and better industrial mix policies. These new policy approaches should be thought of as a tool for comprehensive regional planning within the national development objectives. Were the planned policies outlined above to be purposely carried out, they may lead to new opportunities for more efficient resource allocation and may enable the lagging region in Thailand to establish a firmer base for the expansion of production and income.

URBAN DEVELOPMENT AND INDUSTRIAL ESTATES IN THAILAND

Chaktip Nitibhon

I. INTRODUCTION

In this paper, we shall move from the general to the particular, which means discussing the wider topic of urban development first and then moving on to see how industrial estates, one of the basic elements in urban planning, fits into this general picture. In order to appreciate the intricacies of urban development in Thailand, it may be useful first to present a brief account of the process of urbanization in Thailand and then to discuss the main urban problems and alternative methods of alleviating these problems of urbanization in the future.

As is generally known, Bangkok^{1/} is one of the world's most dominant primate cities.^{2/} It is not merely the capital of Thailand, it is the residence of the King, the seat of Government, the nation's main port, the hub of Thailand's international and domestic transportation system and is the key to the country's financial, commercial, industrial, educational and administrative activities. Various statistics can be quoted to support our statement. For example, Bangkok has 77% of the nation's telephones, nearly 50% of the country's motor vehicles are registered in the Bangkok-Thonburi area and the Metropolis consumes over 80% of the total electricity generated in the Kingdom. *Urbanization in Thailand can usefully be seen in terms of overurbanization in the Bangkok-Thonburi Metropolitan area and underurbanization in the rest of the country.* Bangkok-Thonburi, with a 1970 population estimate of 2.9 millions is roughly 33 times larger than Chiangmai, the second largest city in Thailand. In addition to this, about 56% of Thailand's urban population live in the Bangkok-Thonburi Metropolitan area. As such, the more immediate problems associated with urbanization in Thailand tend to be concentrated in the capital.

In general, it can be stated that the level of urbanization in Thailand is relatively low, with about 15% of the total population living in urban and semi-urban areas known as municipal areas and sanitary districts.^{3/} On the other hand, the rate of urbanization is relatively high. During the 1947-67 period, the rate of growth of Thailand's rural population was roughly 3% per annum, while the average rate of growth of Thailand's urban population was about 5% per annum.^{4/}

With respect to regional differences in the degree of urbanization, the Central Region is the most urbanised, but in terms of moderate size cities, the other three regions have been experiencing rising levels of urbanization. Looking at the list of the ten most populous cities, the apparent trend during the post-war period has been the increase in

^{1/} In this paper, Bangkok refers to the twin cities of Bangkok and Thonburi.

^{2/} In fact, the rest of the country can be described as the hinterland of Bangkok.

^{3/} cf. *Family Planning in Thailand* published by Planned Parenthood Association of Thailand (1973), page 1

^{4/} cf. Sidney Goldstein, *Urbanization in Thailand, 1947-67*, Bangkok, Institute of Population Studies, Chulalongkorn University, 1972, p. 4

the number of big cities of the North, Northeast and Southern regions that have made the top ten list. If we treat the twin-cities of Bangkok and Thonburi as one urban area, in 1947, five of the ten largest cities in Thailand were located in the Central region. In 1970, only two Central region cities were in the top ten list, with each of the other three regions increasing its quota of big cities. Thus the overall impression is that though the Bangkok-Thonburi area has continued to dominate urbanization issues in Thailand, *urbanization in Thailand has become more widespread* in recent years. This trend has been reinforced by the development of secondary cities as regional growth centres as an important development strategy in regional planning and as an instrument for reducing regional income disparities and for achieving a better spatial balance for long-run growth and stability. The development of secondary cities in Thailand is also supposed to help alleviate the pressures of growth in the Bangkok-Thonburi area.^{5/}

II. URBAN DEVELOPMENT : GENERAL PROBLEMS

The main problem of urbanization in Thailand is the *lack of urban planning*. There is very little control over the growth and spread of urban areas. Present legal and administrative powers to control the development of urban areas are very limited. Thailand's Town and Country Planning Act of 1936, which was modelled on the British Town and Country Planning Act of 1932 was ineffective largely because it lacked funds for land appropriations development and because there were administrative problems.

In what follows, we shall summarise Mr. Romm's excellent survey^{6/} of the laws that are relevant to city planning to illustrate the very limited powers that exist for controlling urban growth in Thailand. In most developed countries, there are laws to control various aspects of construction. In Thailand, there is a *Building Control Act (1936)* which gives the Ministry of the Interior some control over engineering aspects of construction such as structural stability, but no control is provided for influencing construction in terms of locational suitability. One law which does have something to say about location is the *1939 Cemetery and Cremation Act* which permits the Municipality to regulate the locations, characteristics and use of cemeteries. The scope of this law is obviously limited. According to the *Fire Damaged Area Act* of 1933, the Ministry of the Interior is allowed to control plans for reconstruction when an area is destroyed by fire. This act allows the Department of Municipal and Public Works and the Department of Town and Country Planning to set up conditions with respect to the construction and development of the fire damaged area.

As far as industry is concerned, the *Factory Act* of 1960 allows the Ministry of Industry to buy land, supervise the development of services and infrastructure and guide factory location within the industrial zone, among other things. This Act has been supplemented by the National Executive Council Decree 339 which is discussed in section 4.3 of this paper.

There are many laws concerning the rights of eminent domain and the compensation of owners whose lands are appropriated for public use. Under the authority of the *Land Appropriations Act* of 1939, the Government can appropriate land for na-

^{5/} The World Bank is presently cooperating in a Secondary Cities Infrastructure Development Programme for Northeast Thailand which should help check the deterioration in urban services due to rapid rural-urban migration.

^{6/} cf. Jeff Romm, *Urbanization in Thailand*, Ford Foundation, 1972, p. 80-86

tional purposes; the *Highways Act* of 1939, allows the Highways Department to acquire land needed for highway development; the *Antiquities Act* of 1939 allows the Fine Arts Department of the Ministry of Education to make compulsory purchases of sites or objects of art with historical significance; and the *Irrigation Act* of 1942 allows the Department of Irrigation of the Ministry of Agriculture to acquire land needed for flood control and water transportation purposes and under the *National Park Act* of 1942 the Ministry of Agriculture can declare any area a national park. This list suggests that the Government has considerable legal powers over land use, but in practice, Government agencies face many obstacles in appropriating land despite these laws. In addition, these operations only affect urban development at the margin.

At present, *what is needed is an officially accepted Master Plan for urban development to act at least as a guideline for the development programmes* of local authorities and various public service agencies. The costs of not having an officially accepted Master Plan for the Bangkok Metropolitan area are high and are accumulating all the time. We can briefly outline some of these costs.

First, without a guiding overall plan for the city, there will continue to be a lack of coordination of the various programmes of the multiple agencies involved in providing basic urban services. Each agency has had to prepare its own long-range programme and make its own assumptions about the Metropolitan area's future growth. The problem is that the assumptions made by these various agencies are not identical. Without an officially accepted Master Plan for the Bangkok Metropolitan area, the city will continue to expand uncontrolled and uncoordinated. Already, factories, schools, hotels, wats, slums, middle and upper income residences exist side by side throughout the Bangkok-Thonburi Metropolitan area. This situation, if left uncontrolled, will increase the difficulty and cost of providing basic urban services.

Secondly, the lack of land use controls and the absence of penalties for speculative land holding have resulted in large areas of unused land even in the city centre itself. Already, on the average, the cost of land represents about 60% of the cost of housing in the Metropolitan area.^{7/} Unchecked land speculation in the Bangkok area has not only contributed to the underutilisation of space in the urban centre, but has encouraged the purchasing of farmlands surrounding the Metropolis and this has had the effect of increasing tenancy rates among farmers in the Central Plain region which has reinforced the flow of migrants into the Bangkok area. What is needed is a basic land development policy enforced with an appropriate system of taxation and regulation which would bring more order to growth, help check the rate of increase of land prices in the Metropolitan area and draw additional revenue for the financing of public services.

Thirdly, Bangkok, as the main port of Thailand and the nation's financial and commercial centre provides various services to the rest of country and as such, the higher cost of doing business in Bangkok will in turn increase the costs of services rendered to those living outside the Bangkok Metropolitan area.

With respect to proposed Master Plans for the Bangkok Metropolitan area, in 1960, Litchfield Whiting Bowne and Associates prepared a Greater Bangkok Plan for 1990. The *Litchfield Plan* assumed that the population of Bangkok would be in the region of 4.5 millions in 1990.^{8/} This plan outlined plans for street patterns, the controlled use of land, zoning, etc. It also proposed that secondary cities be developed to

^{7/} Jeff Romm, *Urbanization in Thailand*, Ford Foundation, 1972, p. 85

^{8/} The population projections used in the *Litchfield Plan* have proved to be underestimates.

take some of the pressures of growth from Bangkok. Some of these proposals have been implemented, but the full plan could not be adopted in the absence of an effective city planning law.

At present, there are two revised provisional Master Plans for the Bangkok Metropolitan area, one proposed in 1970 by the Division of City Planning of the Bangkok Municipality and the other proposed in 1971 by the Department of Town and Country Planning of the Ministry of Interior (DTCP). These two plans differ slightly with respect to projected population size, the land use patterns to adopt and the proposed road network for the city and its surrounding areas. Both Plans though, are based on the idea of controlling land for designated uses and both propose the promotion of other regional centres for relieving the pressures of migration to the capital.

Some salient features of the DTCP's Master Plan include a projected population for the Bangkok Metropolitan area of about 6.5 millions in 1990, the zoning of various urban activities and a new road network. The population estimate is based on the assumption that the Bangkok Metropolitan area's population growth rate can be limited by decentralising employment opportunities with such measures as the creation of industrial estates beyond the Metropolitan periphery and the strengthening of regional growth centres.

With respect to zoning, the DTCP Plan proposes the division of Bangkok into six zones which can be outlined as follows:

1. Government and Institutional District, which will increase in size from about 13,000 rai in 1968 to 39,000 rai in 1990.
2. Commercial Zone, consisting of a central business district with at satellite system of subcentres. (47,000 rai in 1990).
3. Residential Zone, which will encircle the city centre and will have the largest share of the city, with 260,000 rai in 1990.
4. Recreational Zone, which will be 39 times the present extent.
5. School Districts, the aim is that most pupils will be able to walk to school. This means getting students to go to schools in their home districts.
6. Industrial Zone, which will be along the southern edge of the city.

It is this zoning of industrial activities that is the key to a successful integration and coordination of urban development and industrialisation policies, and particularly to the development of industrial estates. The dispersion of industry with its attendant employment opportunities is a primary instrument by which urban planners hope to manage population growth in the Metropolis. With respect to the location of specific industries, the DTCP Plan proposes that industrial location be determined by the criteria of compatibility with other uses. The Plan outlines four industrial categories. The first category consists of industries which produce excessive levels of pollution in terms of smoke, smell, noise and water pollution as well as having potential danger such as the possibility of explosions and the creation of traffic congestion. Such industries would be located in industrial zones or industrial estates outside the Metropolitan area. Category-two industries are those which cause pollution, but to a lesser degree than category one. Such industries may be established in industrial zones near the Metropolis, but at a reasonable distance from residential areas. The third category of industries are light industries which have less environmental effects. Such industries would be allowed closer to residential zones in industrial estates. The fourth category consists of industries which

cause no annoyance. These types of industries can be located anywhere, subject to Government approval.

III. URBAN DEVELOPMENT : SPECIFIC PROBLEMS

Before moving on to discuss the interrelationships of industrial estates and urban development, we shall briefly outline some of the more important problems of urbanization which include housing shortage, traffic congestion and other types of pollution.

3.1 *The Housing Problem*

Housing conditions are mainly an urban problem. In rural areas, homes are built from local wood and thatch. The gentle climate does not require heavy or expensive construction. Land is relatively cheap, water is available from well or canal and simple sanitation is adequate. However, in urban areas, the problem is mainly one of a large number of lower income families who cannot afford 'an urban type of dwelling' erected on expensive urban land. The pace of housing construction has not kept up with the pace of rising demand for housing, particularly in the Bangkok-Thonburi area. As in many Asian capitals, Bangkok has a number of squatter settlements. These settlements in Bangkok have an estimated total population of about 50,000 families. This rough estimate of the population of squatter areas in Bangkok is equivalent to about 10% of the city's total population. Given that these figures are reliable, Bangkok's problem in this area is still not as serious as in Manila, in which the World Bank reports that 30% of Manila's population live in squatter settlements. The housing problem, of course, is not only a problem of slum dwellers. The National Economic and Social Development Board has set a long range objective to eliminate the housing shortage in Bangkok by 1982. This means constructing 17,000 housing units per year, with each unit accomodating an average of 5.5 persons. In 1972, a National Housing Authority (NHA) was set up to help solve the problem of a lack of coordination among the various agencies involved in the construction of homes. The NHA will have to operate in areas outside Bangkok too, to prepare necessary housing for rural-urban migrants in the larger regional towns.

3.2 *Traffic Congestion*

Bangkok, with over 320,000 registered moter vehicles^{9/} has a serious traffic congestion problem. The Royal Automobile Association of Thailand has estimated that the Thai economy loses about 1,000 million baht per annum in the form of vehicle depreciation and fuel waste in traffic jams. Losses in terms of total efficiency of the Metropolis must be much greater. The root cause of the problem is the very high motor vehicle to road space ratio in Bangkok. During the Second National Development Plan period of 1967-71, the number of vehicles registered in the Bangkok area increased by roughly 15% per annum while road construction programmes increased road surface in the Metropolis by about 1% per annum.^{10/} The actual total road surface in the capital is small, accounting for about just 14% of the city's area. There are many other factors responsible for Bangkok's traffic problem, among the most important include less than stringent enforcement of the highway code, inefficient city road network, inadequate urban public transportation and children attending schools a long distance from their homes. There is an estimated 700,000 students in the Bangkok-Thonburi area. Many

^{9/} Source: Car Registration Section, Registration Division, Bureau of Registration and Identification, Ministry of Interior, Bangkok.

^{10/} Source: *Third National Economic and Social Development Plan, 1972-76*, NESDB, Bangkok, 1971, Chapter 14, p. 391

measures have been taken and are being proposed to alleviate this problem. They include the strengthening of traffic police, the possible integration of 23 bus companies, the banning of trucks from the Metropolitan area during the daytime and encouraging pupils to attend schools in their own districts. A team of German consultants has now completed a report on a short-term and a long-range Master Plan as a basic guideline for traffic and transport systems in the Bangkok area. A Traffic Planning Bureau has also been set up to act as a central agency for planning and coordinating work and reviewing investment programmes in traffic and transport in the Bangkok-Thonburi area.

3.3 Other Types of Pollution

Excessive vehicle operation in a limited space is the root of the problem of air pollution in Bangkok today. A Government research committee has found that concentrations of carbon monoxide and other pollutants often exceed 'safe' levels on some busy streets. Fortunately, Bangkok is situated on flat terrain which is open to the atmospheric cleansing actions of wind and rain. However, economic growth, a greater degree of affluence and an increasing application of modern technologies has been generating more waste than the environment and current institutional arrangements can handle. The problem is that current technologies for dealing with the pressures on water resources that are accompanying urban development are too expensive. There is a scarcity of economically feasible water management technologies.

Sewerage disposal in Bangkok is decentralised and is mainly the responsibility of individual households and plants. To centralise it by constructing urban-wide public systems would involve a prohibitive expenditure. The problem is not only one of expensive technology or limited technology, but also one of organization. For example, the Metropolitan Waterworks Authority at present operates on revenue collected for only 20% of the water produced.

IV. INDUSTRIAL ESTATES

4.1 General

The Thai Government has placed high priority on industrial estate development as a means of accelerating the rate of industrialisation and as an instrument in coordinating urban development planning with industrial location policies and as a way of helping to alleviate the problem of urban congestion in the Bangkok Metropolitan area. It is hoped that industrial estates can help accelerate the rate of growth of various secondary cities in other regions as well.

Industrial estates offer many potential advantages. They can alleviate the problem of expensive land costs in or near the Metropolis, assuming that there are zoning laws to reserve land for factory sites against other uses. Industrial Estates contribute perhaps most by capturing the external economies of agglomeration such as saving potential investors a great deal of trouble, effort and expense in erecting a factory, realising economies of scale in the construction of factory buildings and in the installation of public utility and other basic services. Secondly, common technical, repair, and information services which would not pay for one industrial unit alone but do pay for a series of industrial units could be provided by the Industrial Estate Authority. Thirdly, the same Authority can organize housing, transportation and social amenities for workers which no single industrial project could do effectively. Fourthly, industrial estates can help to reduce the risk of single industrial projects by transforming the *stock* of capital required

for the building into a *flow* of expenses for its rental which reduces the risk of capital loss if the investor were to abandon the project and move out.

On a more general level, industrial estates can be used as instruments to create more order in the city and help to reduce the level of pollution and potential pollution in a densely populated area. In addition, the housing problem which we have outlined above can be alleviated if group housing areas are established near the industrial estates. This can be a matter to be settled between the National Housing Authority of Thailand and the management of the industrial estates. With the zoning of industrial activity, it is possible to plan for the accomodation of workers more efficiently as it is easier to estimate the number of required labour force for the industries to be established in the industrial estate zone. This, in brief, is the direct relationship between industrial estate development and urban development.

Focusing more on the development of secondary cities rather than on Bangkok, the role of industrial estates can best be seen in the context of regional development. In this context, industrial estates are not so much an instrument to check overcrowding in the Bangkok Metropolitan area, but rather a positive instrument to introduce new industries into a less developed region within Thailand. Industrial estates, as outlined above, can help by catalysing investments which would not otherwise take place. In addition to this, industrial estates development should be an integrated component of town and country planning. With industrial estates, it is possible to construct new towns more systematically and more comprehensively.

There are many possible types of industrial estates. All the possible variations need not be listed here.^{11/} The important thing is to define clearly the objectives and targets that one expects industrial estates to achieve or help achieve and then to select the type of industrial estates to promote.

4.2 Present Situation in Thailand

The only publicly planned industrial estate in Thailand is located at Bang Chan, 30 kilometres east of Bangkok. This is a 700 rai (280 acres) estate which has been built by the Government over the last ten years. During 1960–71, there were 64 enquiries, with 33 enterprises confirming their original applications and then only 9 ultimately concluding lease contracts.^{12/} This rather poor performance was due partly to the slow rate of construction and the delays in installing basic infrastructure facilities such as telephones and an adequate water supply. It was also due to the fact that the industrial estate concept was not entirely clear to potential investors. During the January–June 1972 period, 7 more new applicants concluded contracts. By mid-1972, roughly 40% of the total estate area was contracted. At present, there are about 15 plants operating at Bang Chan, 10 more plants are under construction and 30 more applications are under review.^{13/}

The types of industries installed at the Bang Chan industrial estates are the industries that one would expect to find in a suburban area. This means market-oriented industries such as food processing and pharmaceutical products and construction related

^{11/} For those interested in various types of industrial estates, see *A Report on Industrial Estates Development in Thailand*, by the Japan Survey Team for Industrial Estates Development in Thailand, March 1970

^{12/} International Development Centre of Japan, *Study of Industrial Site Plans in Thailand*, Tokyo, 1972, p. 180

^{13/} Goderez, *Industrial Estates*, memorandum, February 1972, p. 1

industries such as the production of paints and concrete blocks. In addition to this, there is one plant assembling motorcycles and another assembling automobile parts. Industries which have the potential of creating serious environmental problems are not participants in the Bang Chan industrial estates. This is probably due to the fact that Bang Chan is located relatively near Bangkok and the desire by the estate management to create a good first model of an industrial estate in Thailand.

Other industrial districts have come into existence as a result of private enterprises locating their factories in certain areas in search of common conditions concerning nearness to markets, lower land prices, and a convenient transportation network. These areas were later designated 'industrial districts' by urban planners. A survey of private industrial estates by a Japanese Industrial Estate Team in 1970 revealed that there are a number of private real estate agents selling small plots of land for factory construction in the suburbs, particularly in areas located 20–30 kilometres south of Bangkok. The scale of these industrial estates is relatively small, ranging from 30–500 rai (12–200 acres). Factory lots vary from 5 to 50 rai. Since the shapes of these lots are not always regular, the Japanese Survey Team indicated that such disorder in terms of factory lot sizes and shapes as well as the mixture of various types of industries might result in a lower level of efficiency in overall land use.

At present, relatively large private industrial estate areas are in the pipeline. The Board of Investment press release of 17th March 1972 announced two relatively large projects concerning the development of private industrial estates which, taken together, have an estimated investment plan of 860 million baht (about US.\$ 43 millions). The real estate agencies involved are the Nava Nakorn Co., Ltd. and the Thailand Industrial Real Estate Development Co., Ltd.. The former plans to invest 432 million baht (about US.\$ 21 millions) to establish a 720 acre industrial estate at Pathumthani. This is over twice as large as the Bang Chan estate. The second company intends to invest 428 million baht (US.\$ 21 millions) into an estate of 200–300 acres at Samutprakarn.

4.3 Industrial Estates Authority of Thailand

Towards the end of 1972 (13th December, 1972), an Industrial Estates Authority of Thailand (IEAT) was created by the National Executive Council Decree no. 339. According to articles 2 and 5 of this Decree, the main functions of the Authority include the provision and improvement of land for the establishment of industrial plants, the leasing of land to industrialists and the supervision of public industrial estates in general. The Decree also set up an organizational structure to supervise industrial estates and export processing zones.

The IEAT envisages a fully occupied estate at Bang Chan consisting of 50–100 plants employing an estimated 2,000 to 5,000 workers. The target income during the 1972–76 period is 7 million bahts per annum.

4.4 Future Plans

Although Thailand first started experimenting with industrial estates over a decade ago, not very much progress has been made and Thailand still lacks experience in industrial estate management. One of the recommendations of the Japanese Industrial Estates Team was that the development of industrial estates in Thailand should be coordinated with other policies at the national level such as industrialisation, urbanization and regional development. As a first step, the Japanese consultants made a national survey of possible and potential industrial estate sites. For example, in the field of

industrial policy, it may be appropriate to promote the location of certain types of industries which use large amounts of raw material inputs or a particular region in that region which produces the raw materials. This may mean the promotion of such industries as rock salt production and livestock-based industries in Northern Thailand and the concentration of import-substitution and re-exporting industries in export processing zones near the ports on the Gulf of Thailand.

The already mentioned DTCP Master Plan also makes reference to the establishment of three large industrial estates at Chonburi, Samut Sakhon and Nakorn Pathom. The Chonburi estate will be a 5,000 rai estates employing 24,000 workers in heavy and sophisticated industries such as oil refining, petrochemicals, steelsmelting and shipbuilding. Workers' families, estimated at 60,000 will live in nearly residential areas. An export processing zone is also planned for the Chonburi area at the port of Laem Chabang. The industrial estates at Samut Sakhon and Nakorn Pathom will cover an area of 10,000 rai and 8,000 rai respectively and employ 60,000 and 48,000 workers respectively.

V. CONCLUSION: INTERRELATIONSHIPS BETWEEN URBAN DEVELOPMENT AND INDUSTRIAL ESTATES

In the light of foregoing comments on urban development and industrial estates in Thailand, various policy and planning issues can be derived for further discussion. *There is a definite need to coordinate more closely industrialization and urbanization policies in Thailand in which industrial estates can play a role in both economic and urban development programmes.* Within a broader framework, industrial estates should also be considered *as an essential part of regional planning* as well, particularly to implement policies for industrial decentralisation and the development of specific regions. In a more specific context, industrial estates, if properly planned and implemented, can contribute to urban development planning in the following ways:

1. To promote industrial decentralisation and check excessive population flows into already overconcentrated urban areas this includes the promotion of new industries into a less developed region.
2. To regulate the inflow of industry and guide its orderly location within the Metropolitan area or its vicinity.
3. To provide a healthier and more attractive urban environment.
4. To increase the employment base of urban areas. This is an important political issue as well, in that the urban unemployed tend to have fewer relatives to fall back on than their rural counterparts.
5. To promote more efficient land utilisation.
6. To provide sites to relocate industries displaced by urban renewal projects.
7. To achieve economies in the provision of urban services and utilities.
8. To alleviate existing and particularly potential housing shortage problem, assuming that housing is being organized by either the management team of industrial estates or the industrialists in conjunction with the National Housing Authority.

These are some of the broad and specific policy and planning issues that can be considered in a discussion of urban development planning and the role of industrial estates.

Postscript

The first draft of this paper was completed in September 1973 and was revised early in 1974. Since then, a new City Planning Act passed the third reading in the National Legislative Assembly (December 20, 1974) and is awaiting promulgation. This Act states the conditions under which comprehensive plans for individual cities can be drawn up and approved. The DTCP under this Act is given authority to prepare urban development plans and to guide local governments in the preparation of their own plans. Approval of city plans with respect to technical aspects is vested with the DTCP, but general approval is vested in a city planning committee which is chaired by the Minister of the Interior.

Bibliography:**A. On Urbanization and Urban Development**

1. *Urbanization*, Sector Working paper, World Bank, 1972, (111 pages)
2. "Urban Development," Annex 8 of *IBRD-IDA Current Economic Position and Prospects of Thailand*, Vol. IV, January 11th, 1972, (19 pages)
3. Sidney Goldstein, *Urbanization in Thailand, 1947-67*, Bangkok, Institute of Population Studies, Chulalongkorn University, July 1972, (26 pages)
4. "Urban and Local Government Development," in *Third National Economic and Social Development Plan, 1972-76*, Bangkok, NESDB, October 1971, chapter 14
5. Dr. Phisit Pakkasem, "Urban Development", in Government of Thailand, *Thailand Official Year Book 1973*, chapter 8, pp. 24-27
6. J.D. Herbert, and Van Huyck (eds.) *Urban Planning in Developing Countries*, New York, Frederick A. Praeger, 1968, (122 pages)
7. Jeff Romm, *Urbanization in Thailand*, an International Urbanization Survey Report to the Ford Foundation, 1972 (161 pages)
8. Phaichitr Uathavikul, *Regional Development and Planning in Thailand*, NIDA Report no. 125, July 1970, (100 pages) (roneotyped)

B. On Industrial Estates and Related Topics

1. J.D. Drilon Jr., *A Report on the Industrial Component Secondary Cities Infrastructure Project, Northeast Thailand*, a World Bank study, 1972, (73 pages)
2. Goderez, "Industrial Estates," memorandum, February 1972
3. Laszlo Huszar, "Location, Transportation and Physical Planning," Bangkok, NESDB Regional Planning Workshop, a lecture note, 18th July, 1973
4. International Development Centre of Japan, *Study of Industrial Site Development Plans in Thailand*, Tokyo, October 1972, (248 pages)
5. "Planning for a Bigger Bangkok," in *the Investor*, Vol. 3, no. 5, Bangkok, May 1971, pp. 418-422

6. Department of Town and Country Planning, *Report: Bangkok City Plan*, Bangkok, Ministry of Interior, February, 1971, (74 pages)
7. *National Executive Council Decree no. 339* on Industrial Estates Authority of Thailand
8. *A Report on Industrial Estates Development in Thailand* prepared for Overseas Technical Cooperation Agency, Government of Japan, by Japan Survey Team for Industrial Estates Development in Thailand, March 1970, (133 pp)
9. *Summary Report* of the Joint Thai-IBRD Preparation Mission Activities on the Secondary Cities Infrastructural Project in Northeast Thailand, 1972
10. Amphon Tiyabhorn, "Industrial Location," Bangkok, NESDB Regional Planning Workshop, a lecture note, 26th July 1973

IMPORT SUBSTITUTION, EXPORT EXPANSION AND SOURCES OF INDUSTRIAL GROWTH IN THAILAND, 1960-1972*

Narongchai Akrasanee

The process of economic development in Thailand could be said to have started with the formulation and introduction of the first economic and social development plan in 1960-61. Since then the government has become more involved in the working of the economy in a number of ways. For example it has set out the overall plan, issued broad policy guidelines, promoted industrial development, etc..

In the area of industrial development the role of the government was most active. This had resulted in the rapid growth in the manufacturing sector during the 1960's.^{1/} During the same period structural changes occurred in the manufacturing sector and in the economy as a whole.

The industrialization policy of the 1960's was basically that of import substitution through tariff protection and indirect subsidization of domestic production. This was to last until early 1970's when the government policy began to put more emphasis on the promotion of manufactured exports. New measures to make exports more profitable were introduced. Although the export promotion policy has just begun, and it is still doubtful that the structure of incentives is really in favour of exports, it can be said that the 1970's saw a transition from the period of import substitution policy of the 1960's.

This paper attempts to evaluate the import substitution and export expansion policies in terms of the extent of import substitution and export expansion which took place, and their significance in the industrial growth of Thailand. Part I discusses the concept of import substitution, export expansion and the methodology to be used for analysis. Part II presents and discusses our findings. Reference will be made to import substitution policy in Part III, with discussion on the new policy of export promotion.

I. IMPORT SUBSTITUTION, EXPORT EXPANSION: CONCEPT AND METHODOLOGY

The term import substitution is used to describe the process of domestic production of a commodity the demand of which previously would have to be satisfied by imports. The measurement of import substitution is, therefore, based on some criteria of expected imports. For example Chenery, in effect, defines import substitution as the deviation of actual imports from expected imports, imports which remain in the same proportion to total supply as derived from the normal values of output and imports.^{2/} This is based

* Paper presented at the *Symposium on Asian Industrial Development: Appraisals of Import Substitution and Prospects of Export-oriented Industrialization*, organized by the Institute of Developing Economies, Tokyo, Japan, October 21-25, 1974. Financial support for this research was received from the Economic Research Project, Faculty of Economics, Thammasat University.

^{1/} See Akrasanee (1)

^{2/} Chenery (3). The normal values of output and imports were derived from the country's level of income and size of population fitted to the regression equations calculated from the data for 38 countries.

on some notion of the tendency for economic growth to be uniform among nations under normal circumstances. The focus is then on what are the expected imports.

A more commonly used definition of expected imports is imports that would have taken place had imports remained in the same proportion to total supply in the original period. This was used by Lewis and Soligio.^{3/} The deviation of actual imports from expected imports based on the constant supply share has become the conventional measure of import substitution.

Clearly the constant supply share assumption of import substitution implicitly assumes that imports are expected to increase at the same rate as total supply. But since supply may change due to a change in the export demand for the products, a factor considered to be exogeneous to the system, the constant supply share assumption may be inappropriate. On the other hand the change in imports appears to depend more on changes in domestic demand. Thus if the constant share assumption is used, it is more reasonable to assume that expected imports grow at the same rate as total domestic demand. This is the assumption adopted in this paper. Of course when there are no exports the two measures are equal. The constant demand share measure which has been derived in an earlier work by the author is shown below^{4/}

Let D = total domestic demand
 M = imports
 S = domestic supply from domestic source
 X = gross domestic production
 E = exports
 t, o = period t and the original period
 $\hat{}$ = expected

We have two basic identities,

$$X_t + M_t = D_t + E_t \quad (1)$$

$$S_t = X_t - E_t = D_t - M_t \quad (2)$$

Thus
$$\hat{M}_t = (1 + d) M_o \quad (3)$$

where
$$d = \left(\frac{D_t - D_o}{D_o} \right)$$

Let
$$m = \left(\frac{M_t - M_o}{M_o} \right).$$
 Import substitution is:

$$\begin{aligned} \hat{M}_t - M_t &= (1 + d) M_o - M_t \\ &= (1 + d) M_o - (1 + m) M_o \\ &= (d - m) M_o \end{aligned} \quad (4)$$

To make the measure of import substitution in the calculation comparable among industries we use $\left(\frac{\hat{M}_t - M_t}{|\hat{M}_t|} \right)$, which gives the percentage difference of actual imports from expected imports. The results are shown and discussed in Part II.

The measurement of export expansion is straightforward. Since there is no reason to expect exports to expand one way or another, we simply measure the increase in exports as export expansion. Another indication of export expansion is given by the ratio of exports to domestic output. The results are also shown and discussed in Part II.

^{3/} Lewis and Soligio (7)

^{4/} Akrasanee (2), ch. 3.

AN ANALYSIS OF IMPORT SUBSTITUTION AND EXPORT EXPANSION

The measure of import substitution given above shows in percentage the extent of import substitution which took place in a particular industry. This percentage could be very large or very small, but we will not be able to tell the significance of the process of import substitution in that particular industry by looking at the percentage alone. The same is true for export expansion. We should, therefore, consider import substitution and export expansion relative to other sources of growth of output. This method of analysis is known as the system of classification of output growth first used by Chenery, and later by several others.^{5/}

There are three sources of output increase or decrease: a change in domestic demand, a change in exports, and import substitution. The measurement of export expansion is simply the increase in exports as discussed earlier. Import substitution can be measured by the technique shown above. The effect of the increase in demand then becomes a residual, depending on how the import substitution component is defined.

The constant demand share measure of import substitution can be incorporated into a system classifying sources of an increase in output. First we show that the above measure of import substitution has an equivalent,

Let
$$u_t = \frac{S_t}{D_t} = 1 - \frac{M_t}{D_t} \tag{5}$$

$$\begin{aligned} (u_t - u_0) &= \left(1 - \frac{M_t}{D_t}\right) - \left(1 - \frac{M_0}{D_0}\right) \\ &= \frac{D_t - M_t}{(1+d) D_0} - \frac{D_0 - M_0}{D_0} \\ &= \frac{D_t - M_t - (1+d)(D_0 - M_0)}{(1+d) D_0} \\ &= \frac{(1+d) M_0 - (1+m) M_0}{D_t} \\ &= \frac{(d-m) M_0}{D_t} \end{aligned}$$

$$(u_t - u_0) D_t = (d - m) M_0 \tag{6}$$

Therefore, import substitution may be written as,

$$\hat{M}_t - M_t = (d - m) M_0 = (u_t - u_0) D_t \tag{7}$$

From (2) and (5)

$$X_t = S_t + E_t = u_t D_t + E_t \tag{8}$$

$$\begin{aligned} X_t - X_0 = \Delta X_t &= u_t D_t + E_t - u_0 D_0 - E_0 - u_0 D_t + u_t D_t \\ &= u_0 \Delta D_t + \Delta E_t + (u_t - u_0) D_t \end{aligned} \tag{9}$$

That is, a change in output is classified into a change in domestic demand, a change in exports, and import substitution respectively. The empirical results will show the significance of each component in output growth in percentage (after having divided through by $|\Delta x_t|$).

CONCEPT AND MEASUREMENT PROBLEMS OF IMPORT SUBSTITUTION

The definition of import substitution based on the constant demand share may be criticized for its lack of analytical significance. Import substitution measured by this technique has no other meaning than that the ratio of imports to total domestic demand

^{5/} Chenery (3); Chenery, Shishido and Watanabe (4); Lewis and Soligio (7); Akrasanee (2).

has changed. For example, if domestic demand and supply from the domestic source have both increased proportionately (constant S/D) and at very high rate, import substitution in this case would have been zero. But in fact the unusually high rate of growth of supply from the domestic source could be considered as import substitution.

The problem mentioned above is well recognized by the author. For that reason, an alternative definition of import substitution may thus be the one that indicates the change in the product's degree of being dependent on imports. The degree of dependence should take into account the production and consumption effects of economic growth. Thus import substitution is seen as a net effect of economic growth upon imports through its effects on production and consumption. A high rate of growth of production, higher than the average rate, leads to import substitution, whereas a high rate of growth of consumption increases pressure on the demand for imports. Basing on this norm of the average rate of growth of production and consumption, or the neutral growth criteria, a formula for import substitution has been derived by the author in an earlier study.^{6/} For reason of space, and since this paper's emphasis is on the process of import substitution and its relation to changing industrialization policy, import substitution based on the neutral growth criteria will not be discussed here. The constant demand share measure of import substitution is used to indicate a certain aspect of production change. It is considered to be adequate and useful concept as indicator of industrial development in relative terms among industries.^{7/}

Another group of problems is concerned with the way to proceed from subperiods to the whole period, and the aggregation of industries. For example, if we apply the same calculation to equation (9) for each period it would imply an inconsistency in our expectation. This is because import substitution is measured from the deviation of actual imports from the expectation that they would increase proportionately to domestic demand in each period. Thus, there are two different rates of growth of expected imports for each subperiod, one from the subperiod, and another from the whole period. A way around this problem has been suggested by George Fane (6).

Wesphal (10) has adopted Fane's approach, and applied it to the model similar to our equation (9). In effect, Wesphal's expected imports are based on two norms, i.e. a constant exponential rate of growth of domestic demand, and a constant exponential rate of change of import-demand ratio, throughout the whole period. Thus, imports are expected to grow at a constant exponential rate, the rate being the sum of the constant exponential rates of growth of demand and import-demand ratio.

The proposed remedy is the result of the attempt to measure import substitution from the change in the import-demand ratio. The expected rate of growth of imports is smoothed out for every subperiod. However, the problem of choosing the constant exponential rates of growth of demand and of import-demand ratio remains. Furthermore, the remedy may not be directly applicable to our formulation of equation (9), since we use the proportionate growth of demand within a period as our norm for the expected increase in imports.

The aggregation problem of measuring import substitution should also be noted. As pointed out by Desai (5), and as Wesphal (10) has shown, the constant ratio measure of

^{6/} Akrasanee (2), ch. 3.

^{7/} Other conceptual problems raised by Desai (5) about using some other norms for expected imports so that it would have reference to some notion of optimality are also recognized. For the same reasons mentioned above however, attempts will not be made in this paper to measure import substitution basing on those norms.

import substitution of a group of industries yields different results, depending on whether we aggregate imports and demand of all industries belonging to the group first, then calculate import substitution, or vice versa. This is the outcome of the change in the group's structure of demand. In this study imports and demand are aggregated first, because it is believed that the expectation of imports growing proportionately to demand is even more realistic as more products are aggregated.

The concept and measurement of import substitution have other problems. One of these is the effect of import substitution of one product on the import demand for, and domestic production of, other products. For example, import substitution of petroleum products leads to the demand for crude oil imports. If this is not taken into account in the calculation, the result will give a bias estimate of import substitution. This problem may be handled by deriving the measure of import substitution from an input-output framework, such as the one proposed and used by Morley and Smith in their Brazilian study.^{8/} Since the Morley and Smith measure requires a complete input-output table, it cannot be attempted in this study.

II. IMPORT SUBSTITUTION, EXPORT EXPANSION AND SOURCES OF INDUSTRIAL GROWTH: EMPIRICAL RESULTS

The calculation has been made for the two sub-periods 1960–66, 1966–72 and the whole period 1960–72. The second sub-period includes the years which saw the beginning of export promotion policy. Data of domestic output, exports and imports are classified according to the International Standard Industrial Classification. These are grouped according to the degrees of fabrication and end uses of the products, following the practice of some studies at the World Bank. Thus for some ISIC items, they are divided into two groups depending upon the degree of fabrication of the products in the group. For example, textiles (3211) are divided into thread and yarn in one group, and textile fabrics in another.

The degree of import substitution according to the constant demand share model are shown in Table 1. Table 2 shows changes in the ratios of exports to domestic production. Table 3 summarizes the results on sources of industrial growth from Table 4–6.

From Table 1 we see that the majority of industries has positive import substitution throughout the period 1960–1972. The overall degree of import substitution in manufacturing for the whole period was 13.84 percent, rising from a negative import substitution in the first subperiod (1960–66) to 25.71 percent in the second (1966–72). The negative value of import substitution for the first subperiod was due largely to the negative import substitution in the groups of processed food, beverages and tobacco. Thus when these two groups are excluded, import substitution increased to 2.41 percent for the first subperiod. Import substitution for the second subperiod and the whole period also increased 28.55 percent and 30.28 percent respectively.

Considering only the degree of import substitution for the whole period, import substitution was highest in the group of intermediate products at a lower level of fabrication (intermediate products I), especially petroleum refineries, thread and yarn, and glass products. Import substitution took place in practically all durable and non-durable consumer goods industries, the highest being footwear, leather products, made-up textile goods, and wearing apparel. Soaps and other toilet preparation, cutlery and

^{8/} Morley and Smith (8,9). The constant ratio of imports to total supply was used as a norm in the study.

TABLE I
Percentage of Import Substitution

Industry Group	1960-1966	1966-1972	1960-1972
<i>Processed food</i>	- 86.73	0.94	- 98.41
3111 Meat products	27.00	- 25.27	8.55
3112 Dairy products	13.75	44.68	52.29
3113 Canning & preserving of fruits & veg. }	11.38	- 47.76	- 30.94
3114 Canning, fish, similar food			
3115 Vegetable & animal oils & fats	- 86.87	- 62.72	- 204.07
3116 Grain mill products	58.54	63.94	84.98
3117 Bakery product	66.84	- 411.78	56.08
3118 Sugar factories & refineries	47.33	- 118.85	- 15.52
3119 Cocoa, chocolate, & confectionery	- 14.65	- 40.97	- 61.63
3121 Food products, nes.	- 596.80	2.72	- 577.87
3122 Prepared animal feeds	- 236.35	- 1,693.67	- 2,073.04
<i>Tobacco and Beverage</i>	- 1,268.48	95.92	44.22
3131 Distilling, rectifying spirits	- 2,109.98	97.90	53.54
3121 Wine industries	-	-	-
3133 Malt liquors	- 270.28	81.77	32.49
3134 Soft drinks	- 0.07	- 95.17	- 177.85
3140 Tobacco manufactory	- 1,342.46	97.51	64.21
<i>Construction materials</i>	- 70.17	66.35	42.73
3691 Structural clay products	- 26.16	14.99	- 7.24
3692 Cement, lime and plaster	- 385.06	99.28	96.50
3699 Non-metallic mineral products	- 12.08	94.97	43.70
<i>Intermediate products-I</i>	48.23	33.16	65.38
3211 Thread and yarn	20.37	55.87	64.86
3215 Cordage, rope & twine	3.34	60.17	62.90
3231 Tanneries and leather finishing	- 335.41	87.85	47.09
3232 Fur dressing and dyeing	-	-	-
3311 Sawmills, planing	50.61	- 5,185.88	- 2,517.83
3515 Synthetic resins, plastic materials	- 26.10	24.81	5.19
3530 Petroleum refineries			
3540 Miscellaneous petroleum products }	71.90	56.03	87.64
3620 Glass and glass products	27.76	50.05	63.92
3710 Iron and steel basic industries	- 515.76	- 146.68	- 1,418.94
3720 Non-ferrous metal	21.30	- 27.37	- 0.24
<i>Intermediate products-II</i>	- 2.13	21.37	19.70
3211 Textile fabrics	19.70	58.27	66.49
3219 Manf. textiles, nes.	- 102.85	96.90	93.73
3311 Sawmills (wood product)	- 187.18	43.57	- 62.05
3312 Manf. of wooden and cane	85.72	33.43	90.49
3319 Wood, cork products	- 191.82	- 182.67	- 134.27
3411 Pulp, paper and paperboard	3.09	6.55	6.18
3412 Containers, boxes of paper			
3419 Paper products, nes. }	- 40.40	39.57	15.15
3511 Basic industrial chemicals	- 9.21	- 1.53	- 10.89
3512 Manf. of fertilizers	- 8.24	0.52	- 7.66

Table I (Cont.)

Industry Group	1960-1966	1966-1972	1960-1972
3521 Paints	- 0.16	7.24	70.11
3529 Manf. of chemical. nes.	- 55.27	- 25.47	- 94.82
3551 Tyre and tube industries	48.19	91.30	95.49
3559 Other rubber products	- 18.32	- 8.83	- 28.77
3560 Manf. of plastic products, nes.	-	-	-
3710 Iron & steel (only rolled steel)	4.03	6.67	10.43
3720 Non-ferrous metal (metal casting)	97.84	-104,124.26	- 129.11
3813 Structural metal products	- 15.12	18.12	5.74
3819 Fab. metal except machinery	1.20	3.59	4.74
<i>Nondurable consumer good</i>	- 26.71	44.48	29.64
3212 Made-up textile goods	59.81	77.97	91.16
3213 Knitting mills (outerwear)	- 68.87	- 28.56	- 117.10
3214 Carpet and rugs	- 299.86	38.78	- 144.78
3220 Wearing apparel	29.81	65.93	76.09
3233 Leather products	87.70	98.36	98.62
3240 Footwear	2.75	99.66	99.67
3420 Printing and publishing	-	-	-
3522 Drugs and medicines	1.97	20.85	22.41
3523 Soap and other toilet preparation	31.30	8.09	36.86
3610 Pottery and earthenware	- 20.31	36.03	23.05
3811 Cutlery tools	9.61	44.51	49.85
3851 Professional, scientific equip't	0.99	1.31	2.29
3852 Photographic, optical goods	-	-	-
3901 Jewellery, related articles	92.72	- 9.20	- 110.23
3902 Musical instruments	- 1.74	0.55	- 1.18
3903 Sporting, athletic goods	0.13	19.52	30.33
3909 Manf. industrie, nes.	- 27.32	27.93	8.25
<i>Consumer durable</i>	0.35	20.62	23.43
3320 Furniture	2.76	- 912.03	- 883.13
3812 Furniture, fixture, primarily metal	- 8.90	43.38	38.34
3832 Radio and communication equipment	1.85	2.98	4.78
3833 Electrical and housewares	6.73	18.86	24.33
3844 Motorcycles and bicycles	7.27	25.85	31.24
3853 Manf. of watches and clocks	- 20.08	4.05	- 15.22
<i>Machinery</i>	4.08	8.45	12.22
3821, 22, 24, 29 Other ag. & non-elect. mach. & equip't	1.34	2.36	3.69
3823 Metal & wood working machinery	- 5.95	23.25	18.69
3831 Elect. industrial machinery	6.66	5.53	11.84
3825 Office computing & accounting equip't			
<i>Transport equipment</i>	- 18.64	41.25	30.38
3841 Ship building and repairing	- 195.07	62.62	- 10.30
3843 Motor vehicles	- 6.14	40.59	36.94
3842, 45, 59 Transport equipment, nes.	- 35.12	40.78	20.07
Total	- 15.98	25.71	13.84
Mfg. excluding food, beverages & tobacco	2.41	28.55	30.28

tools, sporting goods, metal furniture, and motorcycles-bicycles all had degree of import substitution higher than 30 percent.

Industries in intermediate products at a higher level of fabrication had positive and negative import substitution. Industries with a high positive degree of import substitution were textile fabrics, paints, tyre and tube industries. For other industries in the group the negative value of import substitution indicates the high demand for imports of intermediate products to be used in the production of consumer goods.

In the groups of processed food, several industries had negative and extreme values of import substitution. This is usually due to a low value of expected imports. For industries such as animal feeds, miscellaneous food products, vegetable and animal oils and fats, and grain mill products, their imports to demand ratios were very low at the beginning of the period, resulting in the value of import substitution being very sensitive to any changes in the ratios. Results of the group of beverages and tobacco, although mostly positive, are also subject to the same kind of sensitivity.

In construction materials, cement and non-metallic mineral products had 96.5 percent and 43.7 percent import substitution respectively. All industries in the group of machinery had positive import substitution. Finally, import substitution of motor vehicles was 36.9 percent.

The development of import substitution during the two subperiods was mixed. Generally, industries had an increasing trend of import substitution. This is true for all groups of industry except intermediate products I. This means that during the first subperiod although there was a rapid increase in domestic production, imports were still growing rapidly. The situation may be described as an import dependent import substitution. On the other hand, during the second subperiod, import substitution was taking place more effectively, resulting in a relatively low value of imports.

On the subject of export expansion, the period 1960–1972 saw an important development in manufactured exports. Manufactured exports increased by almost 5 times from 1960 to 1972. And if processed food and tobacco beverages were excluded, the increase was almost 10 times. When we look at an individual industry level, we see that the rapid expansion was due to a number of industries in each group. These industries were food canning, sugar, and animal feeds in processed food; cement in construction materials; non-ferrous metal (tin smelting) in intermediate products I; textile fabrics, wood products, and basic industrial chemicals in intermediate products II; made up textile goods, wearing apparel, and jewellery in nondurable consumer goods; and furniture in consumer durables. In addition, new exports were taking place in non-metallic mineral products, leather, tyres and tubes and other rubber products, and iron and steel products.

However, when exports are considered relative to total domestic production, the total ratio only increased from 1960 to 1966, after which it fell in 1972. As shown in Table 2, the ratios of exports to total domestic production were 10 percent, 17.7 percent and 13.1 percent in 1960, 1966 and 1972 respectively. When food, beverages and tobacco were excluded, the ratios increased from 6.8 percent in 1960 to 12.4 percent in 1966, then it fell slightly to 11.5 percent in 1972. Therefore, relative to total domestic manufacturing, manufactured exports were not increasing at the beginning of the 1970's. Nevertheless, it should be noted that the reason the total exports to domestic production ratio was not increasing was because several previously important exports included in the study were declining in value. When we consider only the new exports listed above, the exports to domestic production ratios of almost all of them were on the rise in 1972.

TABLE II
Export Value/Domestic Production

Industry Group	1960	1966	1972
<i>Processed food</i>	0.1429	0.2890	0.2010
3111 Meat products	0.0793	0.0470	0.0413
3112 Dairy products	0	0.0042	0.0007
3113 Canning & Preserving of fruits & veg. }	0.0462	0.3223	0.5102
3114 Canning, fish, similar food			
3115 Vegetable & animal oils & fats	0.0038	0.0285	0.5102
3116 Grain mill products	0.1948	0.3694	0.1722
3117 Bakery product	0.0002	0	0.0028
3118 Sugar factories & refineries	0.0618	0.1103	0.8645
3119 Cocoa, chocolate & sugar	0.0005	0.0007	0.0132
3121 Food products, nes.	0.0852	0.0294	0.0248
3122 Prepared animal feeds	0.2588	1.5983	1.2079
<i>Tobacco and Beverage</i>	0.0017	0.0014	0.0005
3131 Distilling, rectifying spirits	0	0	0
3121 Wine industries	—	—	—
3133 Malt liquors	0	0.0102	0.0071
3134 Soft drinks	0.0028	0.0028	0.0002
3140 Tobacco manufactory	0.0025	0.0004	0.0001
<i>Construction materials</i>	0.0269	0.0128	0.0676
3691 Structural clay products	0.0107	0.0015	0.0345
3692 Cement, lime and plaster	0.0408	0.0223	0.1407
3699 Non-metallic mineral products	0.0113	0.0038	0.0074
<i>Intermediate products-I</i>	0.2784	0.2770	0.2000
3211 Thread and yarn	0.0643	0.1981	0.0912
3215 Cordage rope & twine	0.0555	0.1780	0.1473
3231 Tanneries and leather finishing	0.0374	0.2634	0.2941
3232 Fur dressing and dyeing	—	—	—
3311 Sawmills, planing	0.6162	0.1581	0.1261
3515 Synthetic resins, plastic materials	0.0007	0.0021	0.0285
3530 Petroleum refineries	0	0.0227	0.0470
3540 Miscellaneous petroleum products			
3620 Glass and glass products	0.1582	0.0311	0.0794
3710 Iron and steel basic industries	0.0036	0.1346	0.0048
3720 Non-ferrous Metal	0.5974	0.9254	1.0006
<i>Intermediate products-II</i>	0.0269	0.0693	0.1237
3211 Textile fabrics	0.0306	0.0427	0.1258
3219 Manf. textiles, nes.	0.0017	0.9253	0.0097
3311 Sawmills (wood products)	0.1192	0.0339	0.3776
3312 Manf. of wooden and cane	0.0081	0.0241	0.0599
3319 Wood, cork products	0.0006	0.0801	0.3967
3411 Pulp, paper and paperboard	0.0004	0.0005	0.0567
3412 Containers, boxes of paper	0.0030	0.0027	0.0783
3419 Paper products, nes.			
3511 Basic industrial chemicals	0.0278	0.0895	0.5428
3512 Manf. of fertilizers	0.0003	0.0	0.0014
3528 Paints	0.0000	0.0001	0.0067

Table II (Cont.)

Industry Group	1960	1966	1972
3529 Manf. of chemical, nes.	0.0819	0.0638	1.0425
3551 Tyre and tube industries	—	0.0001	0.0116
3559 Other rubber products	0.0036	0.0046	0.0234
3560 Manf. of plastic products, nes.	—	—	—
3710 Iron & steel (only rolled steel)	0.0002	0.0230	0
3720 Non-ferrous metal (metal casting)	0.0012	0.0004	0.1748
3813 Structural metal products	0.0041	0.0002	—
3819 Fab. metal except machinery	0.5167	0.4297	0.1199
<i>Nondurable consumer goods</i>	0.0205	0.0450	0.090
3212 Made-up textile goods	0.0010	0.1529	0.0870
3213 Knitting mills (outer wear)	0.0001	0.0001	0.1459
3214 Carpet and rugs	0.0002	0.0064	0.0116
3220 Wearing apparel	0.0053	0.0127	0.0897
3233 Leather products	0.0051	0.0275	0.2406
3240 Footwear	0.0007	0.0004	0.0003
3420 Printing and publishing	0.0006	0.0005	0.0001
3522 Drugs and medicines	0.0012	0.0043	0.0021
3523 Soap and other toilet preparation	0.0062	0.0041	0.0155
3610 Pottery and earthenware	0.0050	0.0209	0.0062
3811 Cutlery tools	0.0801	0.0210	0.0342
3851 Professional, scientific equipment	0.1777	0	0.0294
3852 Photographic, optical goods	—	—	0.0161
3901 Jewellery, related articles	0.4863	0.6293	0.5282
3902 Musical instruments	0.1068	0.0331	0.0471
3903 Sporting, athletic goods	0.6415	0.2408	0.1383
3909 Manf. industries, nes.	0.0560	0.0561	0.0416
<i>Consumer durable</i>	0.0094	0.0249	0.0213
3320 Furniture	0.0093	0.0009	0.0062
3812 Furniture, fixture, primarily metal	0.0465	0.0212	0.0007
3832 Radio and communication equip't	—	0.0079	0.0429
3833 Electrical and housewares	0.0178	0.2125	0.0564
3844 Motorcycles and bicycles	0.0061	0	0.0170
3853 Manf. of watches and clocks	—	—	0.3909
<i>Machinery</i>	0.0003	0.00168	0.0139
3821, 22, 24, 29 Other non-elect. mach. & equip't	0.0015	0.0048	0.0440
3823 Metal & wood working machinery	0	0	0.0004
3831 Elect. industrial machinery	—	0.0016	0.0134
3825 Office computing & accounting equip't	—	—	—
<i>Transport equipment</i>	0.0004	0.00137	0.0010
3841 Ship building and repairing	0.0006	0.0025	—
3843 Motor vehicles	0.0003	0.0012	0.0010
3842, 45, 59 Transport equipment, nes.	0.0005	—	—
Total	0.09908	0.1771	0.1307
Mfg. excluding food, beverages and tobacco	0.068	0.124	0.115

TABLE III

Sources of Growth of Domestic Production, by Industry Groups, 1960-66, 1966-72, 1960-72
(Percentage contribution to the increase, in millions of baht)

	ΔX^*	DE*	EXE*	IMSE*	ΔX	DE	EXE	IMSE	ΔX	DE	EXE	IMSE
Processed food	8,544.8	68.5	42.1	- 10.6	4,602.8	107.3	- 7.8	0.54	13,147.5	84.5	24.7	- 9.2
Beverages and tobacco	2,159.4	125.8	0.1	- 25.9	3,441.9	73.6	- 0.1	26.4	5,601.3	99.6	0	0.6
Construction materials	987.5	112.0	0.6	- 12.6	1,955.8	69.5	10.9	19.6	2,943.3	87.6	7.5	4.9
Intermediate products I	5,088.1	33.3	27.6	39.1	5,198.6	65.8	10.5	23.7	10,286.7	35.4	19.0	45.6
Intermediate products II	1,604.3	98.4	10.3	- 8.7	4,408.3	33.6	15.9	50.6	6,012.6	52.2	14.4	33.4
Consumer nondurables	1,756.2	124.4	8.2	- 32.6	5,745.8	51.8	12.6	35.6	7,502.0	74.1	11.6	14.3
Consumer durables	239.6	81.9	4.1	14.0	347.7	31.7	1.6	66.7	587.3	50.9	2.6	46.5
Machinery	429.8	68.1	0.2	31.7	991.8	48.3	2.7	49.0	1,421.7	46.5	2.0	51.5
Transport equipment	848.4	151.4	0.5	- 51.9	2,061.2	24.7	0.1	75.2	2,909.6	66.8	0.1	33.1
Total manufacturing	21,657.9	88.9	24.7	- 13.6	28,753.8	64.1	6.5	29.4	50,412.0	77.9	14.3	7.8
Total mfg. excl. food, beverages and tobacco	10,953.8	80.0	15.8	4.2	20,709.1	47.2	10.7	42.1	31,662.9	57.6	12.5	29.9

Import substitution, export expansion

* ΔX = increase in domestic production

$$DE = \text{domestic demand effect} = \frac{u_0 \Delta D_t}{|\Delta X_t|}$$

$$EXE = \text{export expansion effect} = \frac{\Delta E_t}{|\Delta X_t|}$$

$$IMSE = \text{import substitution effect} = \frac{(u_t - u_0) D_t}{|\Delta X_t|}$$

Source: Table IV-VI

The degree of import substitution and the extent of export expansion do not, however, indicate adequately the significance of their roles in the industrial growth. To do so import substitution and export expansion should be considered in terms of their relative contribution to the industrial growth compared to another source of growth, i.e. the domestic demand effect, as follows:

From Table 3 it is apparent that the increase in domestic demand, rather than import substitution or export expansion, was the most important source of growth of the manufacturing sector throughout the period, contributing 77.9 percent to the growth of total manufacturing from 1960–72. Export expansion contributed 24.7 percent to the increase in manufactured output for the first subperiod, but for the second subperiod its contribution fell to 6.5 percent, resulting in the overall contribution of 14.3 percent. The contribution of import substitution was 7.8 percent for the whole period, with a much greater contribution in the second subperiod than the first.

When food, beverages and tobacco were excluded, the significance of import substitution increased to 29.9 percent for the whole period. This was at the expense of the demand effect which fell to 57.6 percent, while the export expansion effect fell slightly to 12.5 percent. The contribution from import substitution also increased markedly in both subperiods, turning from a large negative in the first subperiod to 4.2 percent, and in the second subperiod from 29.4 percent to 42.1 percent. As for the contribution of export expansion it declined from 24.7 percent to 15.8 percent in the first subperiod, whereas the second subperiod it increased from 6.5 percent to 10.7 percent. The difference between the contribution from export expansion in the two subperiods in this case was due mostly to the decline in the significance of export expansion in intermediate products I.

A closer look at our results reveals many important features of the Thai industrial growth. Firstly in all groups of industry the contribution from import substitution in the second subperiod was positive and, in almost all cases, substantial, compared to the first subperiod when they were mostly negative. This confirms our conclusion stated earlier that import substitution was much more effective in the second subperiod under study. And for the whole period the import substitution-led growth occurred in both groups of intermediate products, consumer durables, and machinery. Secondly, for export expansion its contribution to industrial growth was on the increase in the second subperiod for four groups of industry, i.e. construction materials, intermediate products-II, consumer nondurables, and machinery. This suggests the development in a new group of manufactured exports. And thirdly, the domestic demand effect was much less important as a source of industrial growth in the second subperiod in seven out of nine groups of industry, indicating that the domestic market under the existing circumstances can not be relied upon much more for future industrial growth.^{9/}

Results at the individual industry level are shown in Tables 4–6, and are summarized below.

From Table 6, we see that, for 1960–72, industries in the groups with import substitution-led growth were all types of consumer durables except furniture and watches and clocks, thread and yarn, cordage-rope-twine, petroleum refineries, glass products, iron and steel basic industries, textile fabrics, tyre and tube industries, steel products, and almost all types of machinery. In other groups, import substitution played a significant

^{9/} The "existing circumstances" refer to the conditions affecting demand and supply through the structure of relative prices.

TABLE IV
Changes in Domestic Production and Sources of Growth, 1960-1966

(Millions of Baht)

Industry Group	Δ X	DE	EXE	IMSE
<i>Processed food</i>	8,544.7542	68.45	42.15	- 10.60
3111 Meat products	1,328.2017	97.96	1.50	0.54
3112 Dairy products	143.0815	38.21	0.71	61.08
3113 Canning & preserving of fruits & veg.	408.1408	29.23	69.25	1.52
3114 Canning, fish, similar food				
3115 Vegetable & animal oils & fats	- 36.6803	- 111.90	30.43	- 18.53
3116 Grain mill products	5,513.6244	41.88	57.01	1.11
3117 Bakery products	129.5340	92.78	- 0.03	7.25
3118 Sugar factories & refineries	628.6698	85.48	14.34	0.183
3119 Cocoa, chocolate & confectionery	9.1501	110.88	2.84	- 13.73
3121 Food products, nes.	412.1075	369.19	- 8.26	- 260.93
3122 Prepared animal feeds	8.9245	- 772.56	978.90	- 106.34
<i>Tobacco and Beverage</i>	2,159.3833	125.8	0.11	- 25.90
3131 Distilling, rectifying spirits	524.8703	179.95	0	- 79.95
3121 Wine industries	-	-	-	-
3133 Malt liquors	268.7964	124.89	1.44	- 26.33
3134 Soft drinks	298.8914	99.74	0.27	- 0.006
3140 Tobacco manufactory	1,066.8252	105.63	0.22	- 5.40
<i>Construction materials</i>	987.4517	111.99	0.56	- 12.55
3691 Structural clay products	15.8097	162.79	- 0.52	- 62.27
3692 Cement, lime and plaster	463.4730	119.93	1.15	- 21.08
3699 Non-metallic mineral products	508.1690	102.31	0.05	- 2.76
<i>Intermediate products-I</i>	5,088.074	33.30	27.60	39.10
3211 Thread and yarn	449.5457	56.60	27.30	16.10
3215 Cordage, rope & twine	16.3938	18.40	34.02	37.58
3231 Tanneries and leather finishing	25.2970	39.43	128.87	- 68.30
3232 Fur dressing and dyeing	-	-	-	-
3311 Sawmills, planing	637.4462	123.20	- 23.39	0.19
3515 Synthetic resins, plastic materials	152.9648	153.99	0.29	- 54.28
3530 Petroleum refineries	2,196.4897	0.48	2.27	97.25
3540 Miscellaneous petroleum products				
3620 Glass and glass products	53.5325	51.43	- 3.46	52.03
3710 Iron and steel basic industries	160.8479	79.70	34.55	- 14.26
3720 Non-ferrous metals	1,395.5567	0.002	92.54	7.45
<i>Intermediate products-II</i>	1,604.2692	98.45	10.27	- 8.72
3211 Textile fabrics	599.0578	51.08	5.42	43.50
3219 Manf. textiles, nes.	98.1368	5.76	108.63	- 14.39
3311 Sawmills (wood products)	29.3827	135.54	- 6.88	- 28.66
3312 Manf. of wooden and cane	1.1774	- 60.51	44.50	115.98
3319 Wood, cork products	20.3682	297.47	15.11	- 212.58
3411 Pulp, paper and paperboard	129.5674	89.23	0.05	10.72
3412 Containers, boxes of paper	22.2128	274.32	0.23	- 147.55
3419 Paper products, nes.				
3511 Basic industrial chemicals	88.7849	265.45	11.48	- 176.93
3512 Manf. of fertilizers	- 3.6937	362.31	- 0.03	- 462.28
3521 Paints	15.7908	100.75	0.01	- 0.76

Table IV (Cont.)

(Millions of Baht)

Industry Group	ΔX	DE	EXE	IMSE
3529 Manf. of chemical, nes.	6.2022	1,682.99	— 12.53	— 1,570.48
3551 Tyre and tube industries	293.2304	8.57	0.01	91.42
3559 Other rubber products	159.741.1	107.91	0.59	— 8.50
3560 Manf. of plastic products, nes.	—	—	—	—
3710 Iron & steel (only rolled steel)	109.6384	39.78	3.49	56.73
3720 Non-ferrous metal (metal casting)	25.0598	95.80	0	4.20
3813 Structural metal products	38.5921	170.90	— 0.18	— 70.72
3819 Fab. metal except machinery	25.0201	34.83	39.79	25.37
<i>Nondurable consumer goods</i>	1,756.1595	124.40	8.20	— 32.60
3212 Made-up textile goods	172.8500	— 2.78	31.60	71.17
3213 Knitting mills (outer wear)	71.4196	129.04	0.01	— 29.06
3214 Carpet and rugs	4.2411	411.88	2.37	— 314.25
3220 Wearing apparel	647.171.1	92.49	2.55	4.97
3233 Leather products	49.159.2	88.54	6.09	5.37
3240 Footwear	27.4307	98.89	— 0.01	1.12
3420 Printing and publishing	—	—	—	—
3522 Drugs and medicines	244.9927	95.44	1.13	3.42
3523 Soap and other toilet preparation	267.8455	73.50	0.12	26.38
3610 Pottery and earthenware	14.8117	164.08	5.73	— 69.82
3811 Cutlery tools	127.4007	78.88	— 1.37	22.49
3851 Professional, scientific equipment	3.0601	41.83	— 5.07	63.22
3852 Photographic, optical goods	—	—	—	—
3901 Jewellery, related articles	93.2443	29.47	73.82	— 3.29
3902 Musical instruments	0.1976	481.28	— 16.84	— 364.42
3903 Sporting, athletic goods	5.1600	57.08	— 12.15	55.07
3909 Manf. industries, nes.	27.1751	1,055.71	5.62	— 961.33
<i>Consumer durable</i>	239.5810	81.93	4.09	13.98
3320 Furniture	135.9806	100.99	— 1.02	0.03
3812 Furniture, fixture, primarily metal	3.8209	185.18	0.11	— 85.29
3832 Radio and communication equip't	9.0233	31.08	1.09	67.83
3833 Electrical and housewares	38.8423	39.81	29.14	31.05
3844 Motorcycles and bicycles	51.6044	48.28	— 0.47	52.21
3853 Manf. of watches and clocks	0.3095	2,021.41	—	— 1,921.41
<i>Machinery</i>	429.8307	68.10	0.20	31.70
3821, 22, 24, 29 Other ag. & non-elect. mach. & eq't	92.1552	63.00	0.70	36.30
3823 Metal & wood working machinery	182.5923	103.22	0.01	— 3.23
3831 Elect. industrial machinery	155.0832	71.10	0.50	28.40
3825 Office computing & accounting equip't				
<i>Transport equipment</i>	848.4120	151.40	0.5	— 51.90
3841 Ship building and repairing	40.9141	370.88	1.09	— 271.97
3843 Motor vehicles	804.6546	116.55	0.17	— 16.71
3842, 45, 59 Transport equipment, nes.	2.8433	2,817.1	0	— 2,717.1
Total	21,657.916	88.90	24.70	— 13.60
Mfg. excluding food, beverages and tobacco	10,953.778	80.0	15.8	4.2

TABLE V

Changes in Domestic Production and Sources of Growth, 1966-1972

(Millions of Baht)

Industry Group	ΔX	DE	EXE	IMSE
<i>Processed food</i>	4,602.7500	107.27	- 7.81	0.54
3111 Meat products	631.5149	99.19	1.77	- 0.96
3112 Dairy products	673.2427	31.62	- 6.06	68.45
3113 Canning & preserving of fruits & veg.	523.8024	19.80	85.31	- 5.11
3114 Canning, fish, similar food				
3115 Vegetable & animal oils & fats	297.3740	104.99	0.26	- 5.25
3116 Grain mill products	1,195.4910	274.92	- 178.25	3.33
3117 Bakery product	54.4493	141.46	1.96	- 43.42
3118 Sugar factories & refineries	510.4448	- 142.78	242.85	- 0.07
3119 Cocoa, chocolate & confectionery	9.9563	151.89	3.94	- 55.62
3121 Food products, nes.	634.5461	90.48	1.58	7.94
3122 Prepared animal feeds	71.9286	79.89	86.33	- 66.31
<i>Tobacco and Beverages</i>	3,441.9012	73.64	- 0.01	26.44
3131 Distilling, rectifying spirits	587.1692	19.32	-	80.68
3121 Wine industries	-	-	-	-
3133 Malt liquors	134.7849	34.14	- 0.14	66.00
3134 Soft drinks	549.3335	100.22	- 0.20	- 0.02
3140 Tobacco manufactory	2,170.6136	94.93	- 0.04	5.11
<i>Construction materials</i>	1,955.8137	69.47	10.95	19.58
3691 Structural clay products	9.0447	6.19	13.48	80.33
3692 Cement, lime and plaster	818.5074	51.51	24.67	23.72
3699 Non-metallic mineral products	1,128.2616	85.72	0.97	13.31
<i>Intermediate products-I</i>	5,198.5860	65.78	10.52	23.70
3211 Thread and yarn	258.4157	45.84	- 19.89	74.04
3215 Cordage, rope & twine	71.8744	- 0.68	13.26	87.41
3231 Tanneries and leather finishing	114.0174	41.97	32.50	25.53
3232 Fur dressing and dyeing	-	-	-	-
3311 Sawmills, planing	233.9891	138.52	- 3.56	- 34.97
3515 Synthetic resins, plastic materials	661.8547	56.89	3.78	39.34
3530 Petroleum refineries	2,924.5086	63.63	6.54	29.83
3540 Miscellaneous petroleum products				
3620 Glass and glass products	213.2793	50.10	9.78	40.12
3710 Iron and steel basic industries	449.0250	135.61	- 11.66	- 23.93
3720 Non-ferrous metal	271.6224	- 2.00	138.70	- 36.72
<i>Intermediate products-II</i>	4,408.2721	33.55	15.90	50.55
3211 Textile fabrics	1,416.0389	23.73	19.46	56.81
3219 Manf. textiles, nes.	992.2958	25.87	- 9.67	83.80
3311 Sawmills (wood products)	22.2286	- 57.95	137.84	20.11
3312 Manf. of wooden and cane	37.1897	90.49	9.08	0.42
3319 Wood, cork products	5.5398	- 893.27	1,851.88	- 858.62
3411 Pulp, paper and paperboard	199.6133	65.50	12.75	21.75
3412 Containers, boxes of paper	26.6135	- 58.35	21.75	136.60
3419 Paper products, nes.				
3511 Basic industrial chemicals	103.8244	24.56	109.00	- 33.57
3512 Manf. of fertilizers	9.6482	63.94	0.19	35.83

Table V (Cont.)

(Millions of Baht)

Industry Group	ΔX	DE	EXE	IMSE
3521 Paints	75.6734	80.73	1.00	18.26
3529 Manf. of chemical, nes.	30.3892	62.19	332.50	— 249.70
3551 Tyre and tube industries	847.9010	39.84	1.51	58.65
3559 Other rubber products	228.1525	100.34	5.26	— 5.60
3560 Manf. of plastic products, nes.	—	—	—	—
3710 Iron & steel (only rolled steel)	298.2806	25.46	25.95	48.58
3720 Non-ferrous metal (metal casting)	19.6491	119.95	— 0.08	— 19.87
3813 Structural metal products	14.8931	— 128.49	58.77	169.72
3819 Fab. metal except machinery	80.3430	21.69	34.06	42.24
<i>Nondurable consumer goods</i>	5,745.8230	51.85	12.56	35.59
3212 Made-up textile goods	940.7618	65.05	14.33	20.62
3213 Knitting mills (outer wear)	328.3253	109.71	1.94	— 11.65
3214 Carpet and rugs	10.3466	11.30	17.15	71.55
3220 Wearing apparel	1,177.8587	75.99	17.59	6.41
3233 Leather products	125.2771	77.96	2.01	20.04
3240 Footwear	32.6289	57.00	0.005	42.99
3420 Printing and publishing	—	—	0.39	—
3522 Drugs and medicines	1,323.1320	82.16	2.22	15.62
3523 Soap and other toilet preparation	532.3981	94.92	0.88	4.20
3610 Pottery and earthenware	43.6470	30.44	4.91	64.66
3811 Cutlery tools	546.4759	46.62	3.25	50.14
3851 Professional, scientific equipment	8.6053	41.59	2.35	56.07
3852 Photographic, optical goods	—	—	—	—
3901 Jewellery, related articles	622.2558	50.43	50.15	— 0.58
3902 Musical instruments	0.3017	11.45	8.15	80.41
3903 Sporting, athletic goods	18.5386	49.0	8.39	42.69
3909 Manf. industries, nes.	35.2706	— 151.88	1.02	250.86
<i>Consumer durable</i>	347.6560	31.73	1.63	66.64
3320 Furniture	181.9200	110.33	1.56	— 11.88
3812 Furniture, fixture, primarily metal	2.1644	— 193.84	6.44	300.28
3832 Radio and communication equip't	15.9653	18.24	7.01	74.75
3833 Electrical and housewares	67.8274	34.89	— 6.92	72.03
3844 Motorcycles and bicycles	75.8076	— 10.63	3.75	106.88
3853 Manf. of watches and clocks	3.9713	— 23.41	93.28	30.13
<i>Machinery</i>	991.8235	48.25	2.75	49.01
3821, 22, 24, 29 Other non-elect, mach, & equip't	181.4479	38.91	10.53	50.56
3823 Metal & wood working machinery	437.7203	85.18	0.07	14.76
3831 Elect. industrial machinery	372.6553	77.85	2.24	19.91
3825 Office computing & accounting equip't				
<i>Transport equipment</i>	2,061.1707	24.77	0.06	75.17
3841 Ship building and repairing	15.2158	— 395.76	— 3.61	499.37
3843 Motor vehicles	2,005.3321	29.63	0.08	70.28
3842, 45, 59 Transport equipment, nes.	40.6228	— 68.74	1.0	167.74
Total	28,753.797	64.11	6.46	29.43
Mfg. excluding food, beverages and tobacco	20,709.146	47.20	10.70	42.10

TABLE VI
Changes in Domestic Production and Their Sources of Growth, 1960-1972

(Millions of Baht)

Industry Group	ΔX	DE	EXE	IMSE
<i>Processed food</i>	13,147.5040	84.50	24.66	— 9.16
3111 Meat products	1,959.7166	98.27	1.59	0.14
3112 Dairy products	816.3242	23.33	0.07	76.59
3113 Canning & preserving of fruits & veg.	931.9432	23.82	78.28	— 2.10
3114 Canning, fish, similar food				
3115 Vegetable & animal oils & fats	260.6937	105.84	4.57	— 10.42
3116 Grain mill products	6,709.1154	83.01	15.09	1.90
3117 Bakery product	183.9833	94.44	0.56	4.99
3118 Sugar factories & refineries	1,139.1146	— 16.72	116.75	— 0.01
3119 Cocoa, chocolate & sugar	19.1064	134.70	3.40	— 38.02
3121 Food products, nes.	1,046.6536	249.30	— 2.29	— 147.10
3122 Prepared animal feeds	80.8531	— 31.90	184.85	— 52.95
<i>Tobacco and Beverage</i>	5,601.2845	99.42	0.03	0.55
3131 Distilling, rectifying spirits	1,112.0395	98.94	0	1.05
3121 Wine industries	—	—	—	—
3133 Malt liquors	403.5813	96.72	0.91	2.36
3134 Soft drinks	848.2249	100.05	— 0.03	— 0.02
3140 Tobacco manufactory	3,237.4388	99.94	— 0.10	0.16
<i>Construction materials</i>	2,943.2654	87.61	7.46	4.92
3691 Structural clay products	24,8544	106.61	4.57	— 11.19
3692 Cement, lime and plaster	1,281.9804	80.80	16.17	3.05
3699 Non-metallic mineral products	1,636.4306	92.12	0.68	7.19
<i>Intermediate products-I</i>	10,286.661	35.40	19.01	45.60
3211 Thread and yarn	707.9614	50.51	10.08	39.41
3215 Cordage, rope & twine	88.2682	3.00	17.12	79.88
3231 Tanneries and leather finishing	139.3144	47.43	50.00	2.57
3232 Fur dressing and dyeing	—	—	—	—
3311 Sawmills, planing	871.435.3	127.27	— 18.06	— 9.20
3515 Synthetic resins, plastic materials	814.8195	91.58	3.12	5.30
3530 Petroleum refineries	5,120.9983	0.47	4.71	94.82
3540 Miscellaneous petroleum products				
3620 Glass and glass product	266.8118	36.18	7.13	56.69
3710 Iron and steel basic industries	609.8729	— 27.68	0.52	127.16
3720 Non-ferrous metal	1,667.1908	— 0.07	100.06	0.001
<i>Intermediate products-II</i>	6,012.5513	52.15	14.40	33.45
3211 Textile fabrics	2,015.0967	27.98	15.28	56.73
3219 Manf. textiles, nes.	1,090.4326	62.66	0.98	36.73
3311 Sawmills (wood product)	51.6113	48.84	55.45	— 4.29
3312 Manf. of wooden and cane	38.3671	82.03	10.17	7.80
3319 Wood, cork products	25.9080	— 190.32	407.86	— 117.53
3411 Pulp, paper and paperboard	329.1807	72.64	7.75	19.61
3412 Containers, boxes of paper	48.8263	67.73	11.96	20.31
3419 Paper products, nes.				
3511 Basic industrial chemicals	192.6073	153.82	64.07	— 117.88
3512 Manf. of fertilizers	5.9545	883.87	0.28	— 784.21

Table VI (Cont.)

(Millions of Baht)

Industry Group	ΔX	DE	EXE	IMSE
3521 Paints	91.4642	84.40	0.83	14.97
3529 Manf. of chemical, nes.	36.5914	412.74	274.02	— 586.77
3551 Tyre and tube industries	1,087.1314	6.47	1.18	92.34
3559 Other rubber products	387.8936	105.72	3.34	— 9.07
3560 Manf. of plastic products, nes.	—	—	—	—
3710 Iron & steel (only rolled steel)	407.9190	22.20	19.92	57.88
3720 Non-ferrous metal (metal casting)	44.7089	104.96	— 0.03	— 4.93
3813 Structural metal products	53.4852	70.76	16.23	13.00
3819 Fab. metal except machinery	105.3631	19.43	35.42	45.15
<i>Nondurable consumer goods</i>	7,501.983	74.14	11.56	14.32
3212 Made-up textile goods	1,113.6118	32.27	17.01	50.72
3213 Knitting mills (outerwear)	399.7449	121.63	1.59	— 23.22
3214 Carpet and rugs	14.5877	134.53	12.85	— 47.38
3220 Wearing apparel	1,825.0298	80.94	12.26	6.80
3233 Leather products	174.4363	79.70	3.16	17.14
3240 Footwear	60.0596	75.98	0.0005	24.02
3420 Printing and publishing	—	—	0.27	—
3522 Drugs and medicines	1,568.1247	83.50	2.05	14.45
3523 Soap and other toilet preparation	800.2436	80.85	0.63	18.52
3610 Pottery and earthenware	58.4587	69.21	5.12	25.67
3811 Cutlery tools	673.8766	47.24	2.38	50.38
3851 Professional, scientific equipment	11.6654	26.56	0.40	73.04
3852 Photographic, optical goods	—	—	—	—
3901 Jewellery, related articles	715.5001	49.91	53.23	— 3.14
3902 Musical instruments	0.4993	204.38	— 1.74	— 102.62
3903 Sporting, athletic goods	23.6986	36.17	3.92	59.94
3909 Manf. industries, nes.	62.4457	64.13	3.02	32.85
<i>Consumer durable</i>	587.2370	50.88	2.63	46.48
3320 Furniture	317.9006	106.33	0.45	— 6.78
3812 Furniture, fixture, primarily metal	5.9853	14.12	— 2.26	88.13
3832 Radio and communication equip't	24.9886	17.10	4.87	78.03
3833 Electrical and housewares	106.6697	30.46	6.21	63.33
3844 Motorcycles and bicycles	127.4120	15.08	2.04	82.87
3853 Manf. of watches and clocks	4.2808	100.97	86.53	— 87.50
<i>Machinery</i>	1,421.6542	46.48	2.02	51.50
3821, 22, 24, 29 Other ag. & non-elect. mach. & equip't	273.6031	40.0	7.30	52.7
3823 Metal & wood working machinery	620.3126	92.05	0.05	7.90
3831 Elect. industrial machinery	527.7385	66.1	1.60	32.3
3825 Office computing & accounting equip't				
<i>Transport equipment</i>	2,909.5827	66.83	0.10	33.10
3841 Ship building and repairing	56.1299	107.73	— 0.18	— 7.54
3843 Motor vehicles	2,809.9867	56.88	0.11	43.01
3842, 45, 59 Transport equipment, nes.	43.4661	42.61	0.3	57.10
Total	50,411.713	77.93	14.28	7.79
Mfg. excluding food, beverages & tobacco	31,662.9	57.63	12.49	29.88

role in the growth of dairy products, made-up textile goods, cutlery and metal tools, professional-scientific equipment, sporting goods, and motor vehicles. Industries with a very high contribution from increases in domestic demand were meat products, vegetable and animal oils and fats, cocoa-chocolate-confectionery, other processed foods, all industries in beverages and tobacco, all industries in construction materials, sawmills, synthetic resin and plastic materials, wood and cork products, chemical materials and products, fertilizers, other rubber products, metal casting, knitting mills, carpet and rugs, musical instruments, furniture, watches and clocks, ship building and repairing, and other transport equipment not elsewhere specified. Some of these industries had a negative contribution from import substitution, implying that part of the increase in demand had to be satisfied by importing more than expected. Other industries which also had a high contribution from the demand effect were grain mill products, bakery products, wood products, paper products, paints and vanishes, structural metal products, wearing apparel, leather products, footwear, drugs and medicines, soaps and other toilet preparation, pottery and earthenware, all industries in the group of machinery, and motor vehicles. As for export expansion its contribution was very large in food canning, sugar, animal feeds, leather, sawmills, non-ferrous metal (tin smelting), wood and cork products, chemical materials, jewelry, watches and clocks. Other industries which had higher than 10 percent contribution from export expansion were grain mill products, cement, thread and yarn cordage-rope-twine, textile fabrics, wood and cane products, paper products, steel products, fabricated metal products, made-up textile goods, carpet and rug, and wearing apparel.

Comparison between the two subperiods shows that although the effect of the increase in demand remained strong through both periods for most industries, generally their contribution to the increase in output was lower in the second subperiod than in the first, and for some industries substantially lower. This is especially true for construction materials, most consumer nondurables and durables. The reverse trend is true for import substitution. We observe a rising influence of import substitution in construction materials, most industries in intermediate products I and II, most industries in consumer durables and nondurables, machinery, and motor vehicles. The results are mixed for the export expansion effect. In processed food, the contribution from export expansion was increasing only for food canning and sugar, but it was increasing for all construction materials. In intermediate products I, export expansion effect increased only for glass products and non-ferrous metal. The export expansion effect was growing in more industries in intermediate products II, i.e. textile fabrics, sawmills, wood and cork products, paper products, basic industrial chemicals, tyres-tubes and rubber products, steel products, and structural metal products. In consumer nondurables and durables, major development took place in industries producing various kinds of clothing and textile articles, jewellery, furniture (wood and metal), radios, bicycles, and watches and clocks.

III. CONCLUSION AND POLICY ISSUES

It may thus be concluded that for the whole period under study, which covers the two development plans and the beginning of the third plan, industrialization of Thailand was characterized by import substitution and production for the domestic market, with a growing contribution from export expansion in a number of industries in the early 1970's. Import substitution was not effective during the period 1960-66 because of the rapid increase in domestic demand for manufactured products, both domestically produced and imported. In the second subperiod, the import substitution effect became more effective as the domestic market was expanding less rapidly. As for the export expansion effect,

more traditional exports became relatively less important in the second subperiod, while the development in many new manufactured exports took place.

To systematically relate the above findings to industrialization policies during the same period would require another paper. We thus summarize only major development in policies, and analyse them in terms of the findings discussed in this paper.

During the 1960's industrialization policy of Thailand may be described as that of import substitution through tariff protection and provisions of incentives under the industrial promotion policy.^{10/} Tariff protection and the industrial promotion encouraged production for the domestic market. Tax incentives encouraged the importation of semi-processed products, and parts-components for further processing. This is consistent with the observed situation of import-dependent import substitution discussed earlier. The import substitution policy also implicitly discouraged exports, because the domestic price obtainable behind a tariff wall is usually higher than the would-be f.o.b. price. Although during the 1960's several incentives were provided to exports, i.e. the maximum of a 2 percent business tax (in most cases) as compared to the 5 percent for domestic sales and the refund of 7/8 of the amount of tariffs and business taxes paid on imported materials, they were found to be inadequate and ineffective as means to induce new manufactured exports.

Towards the end of the 1960's incentives under the industrial promotion policy were revised. Tax privileges were reduced in general cases, and more privileges were given to manufactured exports. For example, exports in effect paid only 0.125 percent of tariffs and business taxes on imported inputs. But in 1970, after the appearance of a balance of payments deficit in 1969, radical and upward changes in tariff rates were made. Obviously, an increase in tariff rates had a discriminatory effect against exports. On the other hand, the government tried to promote exports further. It was spelt out explicitly in the third development plan (1971-76) that there must be a development in manufactured exports. The industrial promotion scheme was revised in 1972 to create higher potential benefits for exports. In addition several tax and credit subsidy schemes were put into effect to promote exports. Exports eligible for the benefits pay no tariffs and business taxes on imported inputs, and 27 merchandise exports could now claim a refund for taxes included in the domestically purchased inputs. In the meantime, tariffs were often adjusted to give protection to domestic industries. Import and industrial controls were applied to some products, also to give protection to the existing industries. During this period, export controls were at times used to stabilise domestic prices, resulting in a discouragement against exports.

The situation described above very well represents the difficulties with which Thailand is faced in the transition of industrial policies from import substitution to that of export promotion. This could partly explain why in the second subperiod import substitution was an important source of industrial growth, and the contribution of export expansion to industrial growth was still limited. However, changes in policies at the end of the 1960's and the beginning of the 1970's may have accounted for part of the development of the new manufactured exports. What should be done as an extension of this paper is to make a careful investigation of the contradictory effects upon industrial growth of the policy measures adopted since the end of the 1960's. Another useful study is an analysis of the new manufactured exports and of the industries in which import substitution has recently been completed. The works involved are being carried out by the author.

^{10/} See Akrasanee (2), ch. 4-6.

The results are expected to provide more information for an in-depth analysis of the recent transition of industrial policies in Thailand.

Bibliography

1. Narongchai Akrasanee, "Growth and Structural Change in the Manufacturing Sector in Thailand, 1960-69," *The Developing Economies*, Vol. XI, No. 4, December, 1973.
2. Narongchai Akrasanee, "The Manufacturing Sector in Thailand: A Study of Growth, Import Substitution and Effective Protection," Ph. D. dissertation, Johns Hopkins University, 1973.
3. H.B. Chenery, "Patterns of Industrial Growth," *American Economic Review*, Vol. 50, September, 1960, pp. 624-653.
4. H.B. Chenery, S. Shishido and T. Watanabe, "The Pattern of Japanese Growth," *Econometrica*, Vol. 30, January, 1962.
5. Padema Desai, "Alternative Measures of Import Substitution," *Oxford Economic Papers*, Vol. 21, No. 3, November, 1969.
6. George Fane, "Import Substitution and Export Expansion: Their measurement and an example of their application," *Pakistan Development Review*, Vol. 11, No. 1.
7. S.R. Lewis Jr., and R. Soligio, "Growth and Structural Changes in Pakistan Manufacturing Industry, 1954-64," *Pakistan Development Review*, Spring, 1965.
8. S.A. Morley, and G.W. Smith, "On the Measurement of Import Substitution," *American Economic Review*, Vol. 60, September, 1970.
9. S.A. Morley, and G.W. Smith, "Import Substitution and Foreign Investment in Brazil," *Oxford Economic Papers*, Vol. 23, No. 1, March, 1960.
10. Larry E. Wesphal, "Measures of the Trade Orientation of Resource Allocation," *mimeo*, May, 1972.

DISTRIBUTION OF INCOME AND WEALTH IN THAILAND

Udom Kerdpibule

I. INTRODUCTION

Development Decade and the sixties of economic dualism

In the United Nations declaration of the Development Decade, there is a passage, "...development concerns not only man's material needs but also the improvement of the social conditions of his life and his broad human aspirations.... The main economic objectives for the decade is to create conditions in which the national income of developing countries not only will be increasing but will also continue to expand.... A related condition is that if the acceleration of the rate of growth of incomes goes hand in hand with improvement in internal income distribution and if the social benefits of the improvements are widespread, the number of people living below an acceptable minimum standard can be reduced at a faster rate than the mere increase in aggregate income would suggest."^{1/} However, the United Nations did not lay quantitative target for changes in income distribution.

The Thai Government also expresses a desire for a more equitable distribution of income, in the Second Five Year Plan (1967-71) it is written in objective Number 2 that the Government would "...reduce the degree of income inequality and geographical imbalance, emphasis will be put on rural development as a measure to increase income of the rural population in remote areas."^{2/}

However, the United Nations and the Thai Government may find the task more difficult than they anticipate. There are development theories suggesting that for countries that have economic structures like that of the Southeast Asian countries, there would be an increasing degree of economic inequality as economic growth proceeds. Some of the most well known are the writings of Lewis,^{3/} Ranis and Fei.^{4/} They are among the first to recognize the existence of the dualistic nature of economic structure of developing countries. In such economies, there are two distinct sectors, the relatively modern and advanced manufacturing and commerce and a more backward agriculture and service sector. The growth of the modern sector does not directly or immediately benefit the backward sector. The existence of such dualistic nature gives rise to a significant implication on the distribution of income in developing Southeast Asian countries, since many countries in this area exhibit a high degree of similarity to the typical dual economy in Lewis, Fei and Ranis models.

In his article Lewis set up an assumption that population in developing countries is so large, compared with capital and natural resources that there are large sectors of the economy where the marginal product of labour is negligible, zero, or even negative.

^{1/} United Nations, *The United Nations Development Decade: Proposal for Actions*, p.2.

^{2/} Government of Thailand, *Summary of the Second Five Year Plan (1967-71)*, p.3.

^{3/} W.A. Lewis, "Economic Development with Unlimited Supplies of Labour," *Manchester School*, May 1954.

^{4/} J.C.H. Fei and G. Ranis, *Development of the Labour Surplus Economy*, p.3.

Not only in agriculture that one can find the abundant labour but also in commerce and service sectors. With this large pool of labour reserve, the modern industrial sector can draw away the surplus labour without affecting the real wage rates. Capital investment would also tend to be made in commerce sector, with a little in manufacturing sector but none at all in agriculture. As new investment is made, more capital is used and the marginal product of labour already employed increase, the capitalist will recruit new workers. New recruits will be taken until the marginal product of the last man employed is equal to the existing wage rate. None of the workers will enjoy the benefit of the increase in their productivity but the increment of income will accrue entirely to the capitalists in the form of profits. The per capita income of wage earners would remain unchanged while that of capitalists continuously increases since in this model, the wage earners are the poorest individuals in the economy. Such phenomenon will imply a higher degree of income inequality. During this stage of development, therefore, one can expect distribution of income to be increasingly unequal. As the outflow of labour from the backward sector continues, a point will be reached where there is no longer surplus labour, wage rates will rise. The trend in the distribution of income will reverse its direction.

Under this model, therefore, the distribution of income will tend toward more inequality for a period of time and then it will become more equal again.

Kuznets however does not anticipate a narrowing income inequality, at least, not as early. Kuznets explains that there are two groups of force in the long run that operate to increase inequality or maintain it.^{5/} These factors are:

(1) the concentration of savings in the upper income brackets.

(2) A change in industrial structure of the income distribution. There is a shift away from agricultural economy where income is more equally distributed to urban type economy where income tends to be less equally distributed.

Therefore, as the economy grows and become more urbanized, there would be more inequality in the income distribution.

Furthermore, the process of economic growth would not necessarily narrow the difference in the mean income between rural and urban population. In fact, it tends to widen because per capita productivity in non-agriculture increases more rapidly than in agriculture.

Influences of income distribution on economic growth

The relationship between economic growth and income distribution is a two-way process, not only growth leads to redistribution of income but the changing structure of income distribution can, itself, affect the rate of growth of income. There are two opposite schools of thought, one school tries to argue that more inequality is favourable for further growth, while the other tends to believe that the opposite is the case.

The significance of the effect of the changing pattern of income distribution on growth lies on its impact on saving and investment of the economic surplus so created by the process of economic growth itself. Lewis hypothesizes that the accumulated profits in the hand of capitalist constitute the main, if not the only, source of savings to be used to finance further investment. The larger proportion of the national income going into profits, therefore, the larger the capacity for further growth. Lewis emphasizes

^{5/} S. Kuznets, "Economic Growth and Income Distribution," *American Economic Review*, March 1955, pp. 2-7.

that the increasing proportion of capitalist income that is inducive for economic growth must be in the form of profits, not in the form of rents to the landlords. Landlords would either consume that surplus or hoard it.

A view from the other school is represented by a writing of Correa.^{6/} In his article Correa puts forward some interesting hypotheses:

(1) A high concentration of wealth and income will lead to a relatively slow development of organized capital market. Since financial resources are concentrated in the hand of a few lending and borrowing between members of the group can be carried out through personal contact, the need for an organized capital market will not develop.

(2) A high concentration of wealth and income results in a scarcity of managers and entrepreneur. At any point of time there may be a considerable number of individuals who possess skills and ability sufficient to become managers and entrepreneurs. However, among these individuals only those who own financial resources can go into business, and in such society, this sub-group is relatively small. The number of owners of wealth then becomes an effective constraint on the number of entrepreneurs the economy can have. The higher concentration of wealth, the relatively few are the number of entrepreneurs available. Although Correa recognizes the fact that owners of wealth can hire managers, this only reduces the degree of scarcity but does not eliminate it. The outcome will be that entrepreneurs are the same persons as those who own wealth. Such outcome brings forth serious consequences:

(a) There will be a tendency for capital to be invested in socially non-productive ventures. These people prefer to invest in business that brings back the return in a short time and does not require technical or productive skills. Land speculation will be the most popular.

(b) Because of the scarcity of capital the marginal product of the capital will be very high. Coupled with the fact that these owners of wealth use the return mainly for consumption, not for the expansion of business, little investment effort is needed to bring forth return sufficient to afford the aspired standard of living of the wealth owners. It is the trade-off between marginal utility of income and leisure that determines the extent to which capital is invested rather than the trade-off between marginal revenue product of the capital and the rate of interest. Capital will not be used to its optimum intensity; in other words, the capital resource will not be most efficiently utilized.

Since distribution of income and distribution of wealth are causally related, we can draw similar implications based on the level and distribution of income. In a society where distribution of income is highly concentrated, the proportion of national income that is invested will be relatively low. Those who receive large share of income are the wealthy owners who will consume a large part of it because of the lack of incentive to save and invest. For those in the low income brackets, their incomes will be too low to have anything left to save. There are some high-income people who do save but they would likely to hoard it rather than to invest because the marginal utility of additional income from investment is small relative to marginal utility of leisure. The propensity to hoard will be an increasing function of the concentration of wealth and income. Therefore, to maximize savings and investment, wealth and income should not be highly concentrated.

^{6/} H. Correa, "Wealth and Income Distribution, Investment and Economic Development," *Southern Economic Journal*, October 1967.

An empirical work on the determinants of aggregate personal savings in Asia has been undertaken by Williamson.^{7/} In his study, Williamson cites Houthakker's hypothesis on functional income distribution that source of income has a profound effect upon savings behaviour and goes on to test the hypothesis using Asian data. The aggregate income was broken up into wage and salary income and non-labour income that includes property income as well as entrepreneurial income. Williamson constructs a model, putting saving as a function of various components of income and direct taxes on households. He found coefficients of saving that was attached to non-labour income in all tests to be the coefficient attached to labour income. In addition, the parameters for long-run saving function were found to be less than those of the short-run saving function. Direct taxation was found to have a large negative effect in the long-run saving function.

Williamson also tested the permanent and transitory income hypothesis of the Friend and Taubman type. The three-year moving average of the aggregate disposable income was used to represent the permanent income component and the transitory income component was expressed in terms of deviation of actual disposable income from the moving average. The aggregate saving was then expressed as a function of the two component of disposable income. The results showed that the marginal propensity to save out of transitory income exceeded that of permanent and measured income. Furthermore, the marginal propensity to save out of permanent income was smaller than that of the measured income. The high marginal propensity to save out of transitory income contributed greatly to the relatively high marginal saving rates in Asia.

Since the transitory component of income is most likely to be made up largely of the increment in income from profit, coupled with other findings mentioned earlier, both sets of the result of Williamson's study seem to confirm that it is the incomes from property and entrepreneurship that are the main sources of savings. This seems to point to a conclusion that a shift toward a greater inequality of income is generally favourable for the expansion of savings.

Nevertheless, Williamson did not consider further into the impact of distribution, or sources of income on the pattern and intensity of investment.

It is not, therefore, conclusive as to whether a more highly concentration of income is a detriment to both saving and investment.

On the positive side of a more equitable distribution of income, Rostow^{8/} noted that one possible mechanism for inducing a high rate of plough-back into productive investment is a rapid expansion in the effective demand for domestically-produced manufactured goods. As the marginal propensity to consume of the low income families is relatively high, an increased income in the hand of these individuals would substantially stimulate effective demand for these commodities and this would act on as an incentive to invest among owners of financial resources who hitherto have been hoarding their wealth.

It is worth mentioning also that the Lewis type models implicitly assume that the source of fund for investment comes entirely from domestic savings. Then, under such assumption, it is appropriate to place more emphasis on the size of domestic savings and how to maximize it rather than on how the savings is invested, and a more concentrated ownership of income and wealth is to be preferred. The real world is somewhat

^{7/} J.G. Williamson, "Personal Saving in Developing Nations: An Intertemporal Cross-Section from Asia," *Economic Record*, June 1968.

^{8/} W.W. Rostow, "The Take-off into Self-sustained Growth," in A.N. Agarwala and S.P. Singh (ed.), *The Economics of Under-development*, p. 176.

different, however. Most developing countries in Southeast Asia have considerable access to sources of capital outside their own economies, an over concern about maximisation of domestic savings at the expense of more concentrated income distribution may not be the best policy.

II. DISTRIBUTION OF INCOME AND WEALTH IN THAILAND

(a) *Data and methodology*

Data on income and wealth are relatively scarce and fragmentary. The main sources of information on family income and consumption are the *Household Expenditure Surveys*, published by the National Statistical Office. Three surveys have been conducted, 1958, 1962/63 and 1970. The 1958 survey covers only households in municipal areas in Bangkok and some selected provincial towns to represent their geographical regions. The 1962/63 has a wider coverage, samples were taken from within as well as outside municipal areas. The results of the 1970 survey have not yet been published, but some preliminary results were obtained from the National Statistical Office, for use in the present paper.

Information on distribution of income and land ownership of farmers can be obtained from various reports on farm management surveys conducted by government agencies such as the Division of Agricultural Economics, Ministry of Agriculture, Department of Land Development, Kasetsart University and Department of Land Co-operatives.

National income and national account data used in this paper are the latest estimates by the National Economic Development Board (now the National Economic and Social Development Board) which are not yet published but kindly made available for use in this research. Regional income data are more scarce, information is available for North and North East regions.

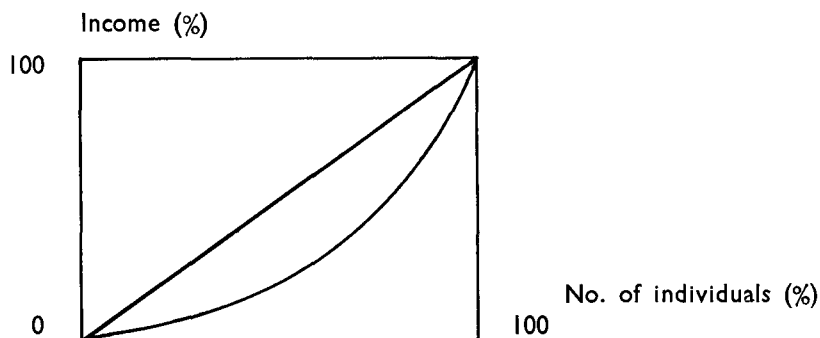
Data on wage rates and number of employed persons by industry can be obtained from the *Yearbook of Labour Statistics*, published by Department of Labour, Ministry of Interior. The figures for employment in the *Yearbook* are available for year 1960 only. For a complete series covering the period from 1960 to 1969 Mr. Saburo Yamada, an adviser to the Manpower Planning Division, National Economic Development Board, has made such estimates available in his *Report on the Measurement and Promotion of Productivity for the Third National Economic and Social Development*, a mimeograph paper, published in February 1971. Other related information on employment and work status can be obtained from a series of Labour Statistics and Employment Market Information for various regions, published by Department of Labour. It is a series of reports on labour force survey conducted in 1968, covering the whole kingdom.

Finally, information on tax rates is obtained from the Document Section, Revenue Department. It is compiled into a book entitled "Thailand Revenue Code".

Methodology

Kuznets says that no single measure of inequality in the size distribution of income for a given country is adequate.^{9/} However the simplest and intuitively most obvious measure seems to be the "concentration ratio". This ratio is derived from the Lorenz curve and is defined as the ratio of the area between the Lorenz curve and the diagonal representing full equality to the area under the diagonal. The concentration ratio, therefore, measures the departure of the Lorenz curve from complete equality.

^{9/} S. Kuznets, "Quantitative Aspects of the Economic Growth of Nations," *Economic Development and Cultural Change*, January 1963, p. 12.



The Lorenz curve is a plotting of the cumulative proportion of units, usually in percentages, arranged in order from the smallest income to the largest against the cumulative share of the aggregate income accounted for by these units. The percentage of accumulated number of individuals is plotted on the horizontal axis and the percentage of accumulated income is on the vertical axis. The diagonal line, therefore, represents the line of perfect equality, i.e. if everybody has exactly the same income. If, on the other hand, one person has all the income the Lorenz curve would be represented by the two axes joining at the lower right hand corner. The actual curve falls between the two extremes, the closer to the diagonal the less the inequality. The smaller the concentration ratio, therefore, means less inequality.

It must be borne in mind that this measure is purely a formal index of differences among income of several groups in the distribution. No normative implication may be attached to any size of the concentration ratio. Kuznets suggests that to make the index more meaningful the base to which the ratio is set against should embody some degree of inequality or inequality which is "warranted".^{10/} But again, there is no agreed upon standard or criterion as to what degree of inequality that is "warranted". One of the advantages of the Lorenz curve is that it can show the income shares of various ordinal income groups and this can be very useful for our purpose. Gannagé^{11/} in his study on an international comparison of income distribution found that countries in the process of development were characterized not so much by the poverty of the lower categories or the wealth of the higher ones as by the smallness of the intermediary groups.

In an attempt to construct the Lorenz curve from empirical data, some regression models were tried but none was found to be very satisfactory, large errors appeared on the lower end and the upper end of the curve. It was deemed feasible to use a simple technique of free hand drawing through the points of observations and the concentration ratio, as well as the income shares of ordinal groups, were derived from such curve.

^{10/} S. Kuznets, "Quantitative Aspects of the Economic Growth of Nations, Part VIII: Distribution of Income by Size," *Economic Development and Cultural Change*, January 1963.

^{11/} E. Gannagé, "The Distribution of Income in Underdeveloped Countries," in J. Marchal and B. Ducros (ed.), *The Distribution of National Income*, proceedings of a conference held by International Economic Association, 1968.

With respect to the definition of income used in the analysis, the same definition used by the National Statistical Office in their surveys is followed. The term family income is defined as the total receipt of the household during a period of one year, or one month. Such receipts include compensation for work effort, receipt for the use of property, gifts and transfers. In the Revenue Code, individual income is defined to include receipt in kind as well as in cash and does not include receipts in the form of pensions, gifts and transfers.

The units of income recipient used in this paper are both "family" and "individual" depending upon the source of data. In the *Household Expenditure Survey*, the family unit is defined as a group of two or more persons, residing in the same living unit and spending from a common household budget.

There arises a problem in connection with the size of the family unit. The size of families appears to be positively correlated with income, this happens to be in both urban and rural families. Preferably, adjustments should be made to the family income in every income class to take into account the influence of family size on income. Unfortunately, not all survey data have information on family size, and when it is available, it is not in the form that can be used. Therefore, it has to be assumed that the relative size of families within a given set of data, e.g. urban or rural, did not change significantly during the period of observation and thus the data are used as they are without adjustment. When inter-group comparison is made, e.g. between urban and rural groups it will have to be done with an awareness that the pattern of the relationship between income and family size in the urban and rural groups may differ significantly enough to affect the final conclusion.

(b) *Size distribution of income of urban families*

Based on the results of 1955, 1962/63 and 1970 *Household Expenditure Surveys*, estimates for the relative income shares in the distribution of income were made. The term "urban" here is used synonymously with the term "municipal areas" and "towns". Class midpoints were used to represent the mean income of the class. For classes with open end, an approximation method is used to determine the mean income of the class. For the upper open-ended class, a percentage figure showing the relative distance of the mid-point to the lower limit of the class immediately next to that open-ended class is applied to the figure of the lower limit of the class to determine the distance from the class boundaries. A similar method is used for the lower open-ended class.

Although there are three sets of survey data available, not all are comparable. The 1958 survey covers only families of employees with regular income and the very low as well as the very high income families were excluded. The 1962/63 survey covers a larger universe to include families of all occupations but the samples are not stratified according to the size of population in each occupation. In the 1970 survey, samples are stratified according to occupations. It appears, therefore, that the 1962/63 and 1970 are more comparable, especially for our purpose of comparing the pattern of income distribution. The 1958 survey cannot really be used because of its narrow range of coverage, the result will show a more equal distribution of income than it really is. There is still a problem, however, in the 1962/63, income was defined to include value of income in kind as well as monetary income but in the 1970 survey the income was defined to include

only monetary income. This, however, is not expected to affect the pattern of income distribution, or even the mean income, to a significant degree because the income in kind constitutes a very small part of family income of the urban families. The analysis, therefore, will be based on the 1962/63 and 1970 survey results.

TABLE I (A)
Size Distribution of Family Income: Urban Areas, 1962-63^{a/}

Income class (baht per year)	Mid point	No. of families (%)	Percentage of accumulated no. of families	Percentage of accumulated income
Under 3,000	2,250	17.7	17.70	3.44
3,000- 6,000	4,500	18.7	36.40	10.85
6,000-12,000	9,000	34.2	70.60	38.01
12,000-18,000	15,000	14.7	85.30	57.49
18,000-24,000	21,000	5.8	91.10	68.25
24,000-30,000	27,000	2.7	93.80	74.60
30,000-36,000	33,000	2.2	96.00	81.04
36,000-48,000	42,000	1.7	97.70	87.30
48,000-60,000	54,000	0.9	98.60	91.62
60,000 and over	67,500	1.4	100.00	100.00
Mean income	11,341			

Source: National Statistical Office, *Household Expenditure Survey 1962-63 Whole Kingdom*, table 6.0, p. 61.

^{a/} The survey covers municipal area of 26 provinces, representing important localities in all regions, income before tax.

TABLE I (B)
Size Distribution of Family Income: Urban Areas, 1970^{a/}

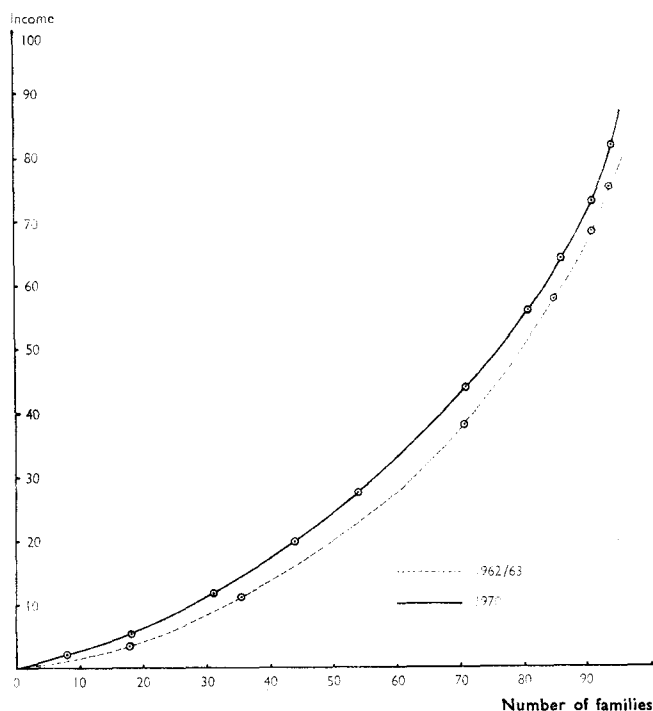
Income class (baht per year)	Mid point	No. of families (%)	Percentage of accumulated no. of families	Percentage of accumulated income
Under 6,000	5,000	7.77	7.77	1.80
6,000- 9,000	7,500	10.35	18.12	5.39
9,000-12,000	10,500	13.18	31.30	11.79
12,000-15,000	13,500	12.65	43.95	19.70
15,000-18,000	16,500	10.05	54.00	27.37
18,000-24,000	21,000	16.91	70.91	43.81
24,000-30,000	27,000	9.90	80.81	56.18
30,000-36,000	33,000	5.37	86.18	64.38
36,000-48,000	42,000	4.62	90.80	73.36
48,000-60,000	54,000	3.36	94.16	81.76
60,000 and over	67,500	5.84	100.00	100.00
Mean income	21,608			

Source: Preliminary results of the 1970 *Household Expenditure Survey* (mimeograph)

^{a/} The survey covers all municipal areas, whole kingdom.

The Lorenz curves based on information in the tables are shown in the following figure.

Figure 1
Distribution of Income of Urban Families, 1962-63 and 1970



Source: Table I (A) and (B).

The income share of different income groups and the concentration ratio for the two distributions are summarized in the table below.

TABLE II
Income Share of Percentile Groups: Family Income, Urban areas

Percentile group in ascending order (per cent)	Percentage share of income	
	1962-63	1970
0- 10	1.5	2.5
11- 20	2.0	4.0
21- 30	4.5	5.0
31- 40	5.0	5.5
41- 50	6.5	6.5
51- 60	7.5	8.5
61- 70	9.5	10.0
71- 80	13.0	12.5
81- 90	15.5	16.0
91-100	35.0	29.5
All groups	100.0	100.0
Bottom 20	3.5	6.5
Bottom 40	13.0	17.0
Top 20	50.5	45.0
Top 10	35.0	29.0
Top 5	23.0	16.0
Concentration ratio	44.78	36.64

Source: Table I (A) and (B) and Figure 1.

It appears that the size distribution of income of urban families shows a definite tendency toward more equality. The concentration ratio decreases from 44.78 to 36.64. What has happened seems to be a redistribution of income from the top income brackets to all other income classes. The income share of the bottom 20 per cent of families in the income ranks increases from 3.5 to 6.5 per cent of the total income. Other classes in the middle range also gain, but the percentage gains are smaller. Only the top two or three classes experience a reduction in their percentage income share, especially the richest families find their income share decreases from 35 to 29.5 per cent of the total income of the society.

Thus there appears no evidence in support of Lewis, Fei and Ranis hypothesis, the size distribution of income is not becoming more unequal. The tendency may exist, nevertheless. Since there are a number of other factors operating at the same time that can influence the distribution of income, it is not sufficient to exclude or rule out such possibility. An analysis of factors influencing the distribution of income will be made in the next two chapters.

(c) *Distribution of wealth of urban Families*

Distribution of income is closely related to distribution of wealth or assets which has income-yielding power. A wide inequality in the distribution of wealth will lead to a wider inequality in the distribution of income. We can divide income yielding assets into two broad categories, tangible wealth and human wealth. The human wealth is generally defined as educational and training achievement, the number of years of formal education is usually used as a unit of measuring the size of human wealth. Education and training is regarded as assets or wealth because of its earning power accrued to the person who possesses it.^{12/} The issue of human wealth will be discussed in more detail later in the paper, only the tangible wealth will be discussed in this section.

Tangible wealth consists of a wide variety of income-yielding assets, physical as well as financial securities. Data for ownership and distribution of income-yielding assets in the Thai society is extremely scarce, only a fragment of information on land ownership is available. With the courtesy of the Department of Land Development some data on absentee land ownership for large holdings^{13/} was made available for our research. These plots of land are owned by absentee landlords who reside mainly in Bangkok and the land is leased out for cultivation or held for speculation and subdivision for urban development. The pattern of distribution is shown in Table III.

The Lorenz curve showing the distribution is shown in the following figure.

A summary of the measurements for the degree of inequality is shown in Table IV.

Figure 2 show that there is a very high degree of concentration of land ownership, almost half of the total land area is owned by the top 10 per cent of the landlords. If we compare the value of the wealth owned by these landlords the inequality would be very large and the gap is widening. This area lies in the locality that is fast urbanized, the value of the land is increasing rapidly.

^{12/} Mrs. Kwanchai Smith estimates that an extra year of journal education can help raise individual income by 3.16 per cent in the Thai economy. K. Smith, "An Analysis of the Influence of Education and Socio-economic Factors on Individual Income in Thailand," *Thai Economic Review*, May 1971, p. 115.

^{13/} Thousand rai or more. One rai is equivalent to 0.4 acre.

TABLE III

Distribution of Absentee Ownership of Land in Some Provinces near Bangkok,^{a/} 1969

Size of holdings (rai)	Total area (rai)	Number of landlords	Percentage of accumulated number of landlords	Percentage of accumulated total area
1,000— 2,000	123,236	82	68.90	32.62
2,000— 3,000	28,041	12	78.99	40.04
3,000— 4,000	32,830	10	87.39	49.73
4,000— 5,000	22,873	5	91.60	54.78
5,000— 6,000	16,394	3	94.12	59.12
6,000— 7,000	13,440	2	95.80	62.68
7,000— 8,000	—	—	—	—
8,000— 9,000	—	—	—	—
9,000—10,000	18,439	2	97.48	67.53
10,000 and over	122,574	3	100.00	100.00

Source: Department of Land Development.

^{a/} Nakorn Nayok, Ayuthya, Pathumthani and Chacherngsao.

TABLE IV

Some Measures of Inequality of Absentee Ownership of Land of Urban Families

Original group (%)	Percentage share
Bottom 20 per cent	7.5
Bottom 40 per cent	16.0
Bottom 60 per cent	26.5
Top 20 per cent	59.0
Top 10 per cent	48.0
Top 5 per cent	39.5
Concentration ratio	50.42

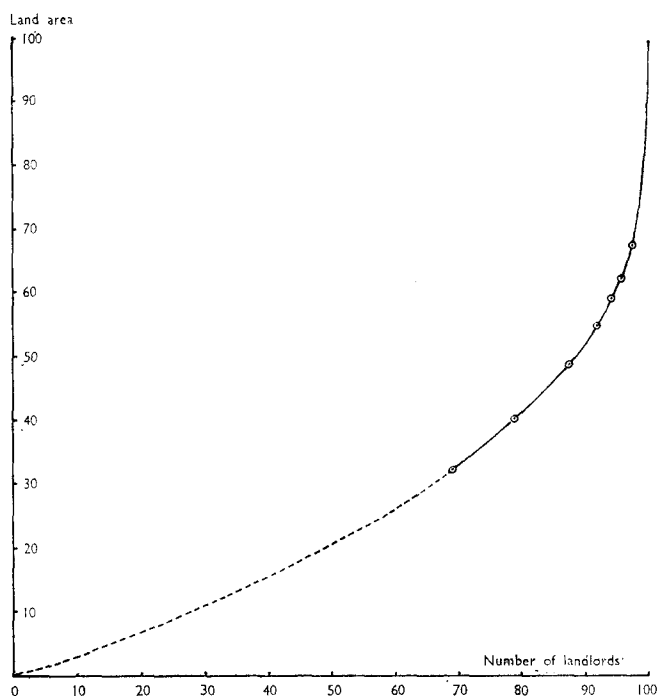
Source: Table III and Figure 2

(d) Distribution of expenditure of urban families

The capacity of an individual or a family to accumulate wealth depends on both income and expenditure. There are theoretical reasons to believe that high income families have larger capacity to save and accumulate wealth and further income than low-income families and this would appear in the pattern of distribution of family expenditure. Distribution of family expenditure would be less concentrated than the distribution of income of families in the same sample. Data are available in the 1958 and 1962/63 surveys but as mentioned earlier, the 1958 survey does not cover families of the whole income range, only the 1962/63 data can be used. The results of the 1970 survey are not yet available.

Figure 2

Distribution of Absentee Ownership of Land of Urban Families, 1969



Source: Table III

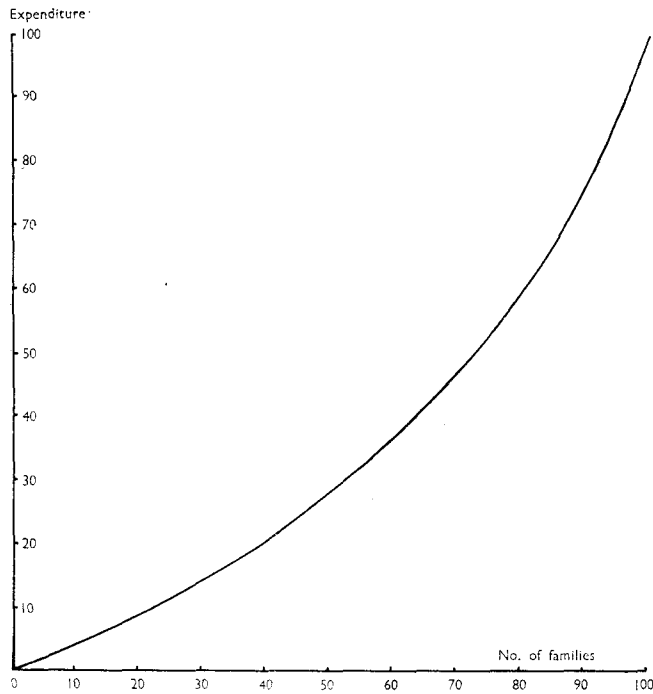
TABLE V

Size Distribution of Family Expenditure: Urban Areas,^{a/} 1962-63

Income class (baht per year)	Per family expenditure ^{b/} (baht per year)	Number of families (%)	Percentage of accumulated no. of families	Percentage of accumulated expenditure
under 3,000	5,398.68	17.7	17.7	7.81
3,000- 6,000	6,759.84	18.7	36.4	18.15
6,000-12,000	10,398.48	34.2	70.6	47.23
12,000-18,000	16,524.60	14.7	85.3	67.09
18,000 and over	27,380.76	14.7	100.0	100.00
mean expenditure	12,230			

Source: National Statistical Office, *Household Expenditure Survey 1962-63*, Table 4.3 and Table 6.^{a/} Municipality area of 26 provinces.^{b/} Consumption plus gifts and contributions, consumption includes assessed value of home-produced items.

Figure 3
 Distribution of Family Expenditure: Urban Areas, 1962-63



Source: Table V.

TABLE VI
 Expenditure Share of Percentile Groups: Family Expenditure, Urban Areas 1962-63

Percentile group in ascending order	Percentage share
0- 10 per cent	4.0
11- 20 per cent	4.5
21- 30 per cent	5.0
31- 40 per cent	6.5
41- 50 per cent	7.5
51- 60 per cent	8.5
61- 70 per cent	10.5
71- 80 per cent	13.5
81- 90 per cent	15.5
91-100 per cent	24.5
All groups	100.0
Bottom 20 per cent	8.5
Bottom 40 per cent	20.0
Top 20 per cent	40.0
Top 10 per cent	24.5
Top 5 per cent	14.0
Concentration ratio	32.38

Source: Table V and Figure 3.

It seems interesting to compare the size and distribution of family expenditure to that of family income and this is possible with the 1962/63 data since distribution of family expenditure is also based on the same set of income bracket classification as that of the family income. This comparative study can give us some insights into the saving behaviour of the urban families.

The distribution of family income, when the income brackets are classified in the same way as that of the expenditure, i.e. broader class intervals, may appear like Table VII.

TABLE VII
Size Distribution of Family Income: Urban Areas, 1962-63
(Broad classification of income brackets)

Income class (baht per year)	Midpoint	Number of families (%)	Percentage of accumulated number of families	Percentage of accumulated income
under 3,000	2,250	17.7	17.70	4.05
3,000- 6,000	4,500	18.7	36.40	12.61
6,000-12,000	9,000	34.2	70.60	43.92
12,000-18,000	15,000	14.7	85.30	66.35
18,000 and over	22,500	14.7	100.00	100.00
mean income	9,830			

Source: National Statistical Office, *Household Expenditure Survey, 1962-63 Whole Kingdom*, table 6, p. 61.

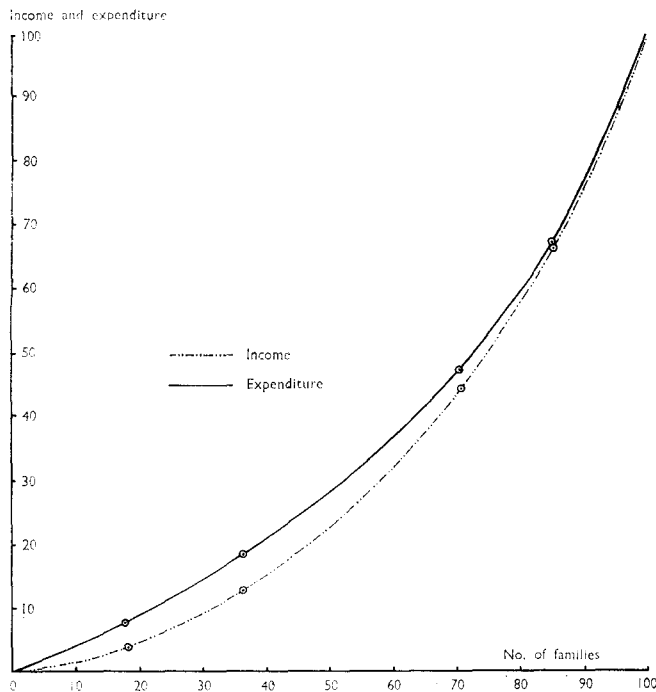
When the figures of the percentage of accumulated number of families with the percentage of accumulated income (from Table VII and the percentage of accumulated expenditure (from Table V) are plotted on the same diagramme, the picture appears as Figure 4.

The comparison must be made with cautions. The difficulty is that the income figure includes receipts in cash only, not the assessed value of income in kind as well, but the expenditure figure includes the assessed value of non-purchased items also. Such difference in the basis of definition can affect both the average size of family income and expenditure as well as the pattern of distribution. The non-purchased items are expected to account for a larger proportion of the total expenditure of lower income families than that of the higher income families. This means that if we reduce the family expenditure to the same basis as that of income i.e., the value of the non-purchased items is excluded, the percentage share of expenditure of the lower income brackets in the overall distribution would be smaller. That is, the pattern of distribution of family expenditure as depicted by the Lorenz curve underestimates the actual degree of inequality. Diagrammatically, this means that the true Lorenz curve of family expenditure is further to the right and away from the diagonal line than the picture indicates.

It is unfortunate that information necessary for such adjustments is not available. It is, therefore, difficult to determine the actual position of the curve, whether it is still on the left or over to the right of Lorenz curve of income distribution. If it is still on the left of the income curve it could be concluded that the percentage share of expenditure of the lower income brackets was larger than the percentage share of their income in the income distribution. This would mean that the lower income brackets had to spend

Figure 4

Distribution of Family Income and Family Expenditure: Urban Areas, 1962–1963



larger proportions of their income on consumption than did the higher income families. Then we could say that the power and ability to save was concentrated in the hands of the rich more than the poor. This would lead to a more unequal income distribution.

If, on the other hand, the Lorenz curve of expenditure appears to be over to the right of the Lorenz curve of income distribution it would indicate that the percentage share of expenditure of low income families was smaller than their percentage share of income and it would mean that they did more saving than the high income families did. This would, in the long run, operate to equalize family income between the poor and the rich. If the two curves happens to coincide it would mean that the ability to save was evenly distributed over the entire income range and would have no effect on the pattern of income distribution in the future.

Since the exact position of the Lorenz curve of the distribution of family expenditure is not known, it is not possible to speculate as to whether the ability to save is concentrated in whose hands and what would likely be the impact on the distribution of income in the economy. Another point to be noted is the apparent negative saving in every income class (see Tables V and VI together), this is the result of the difference in the basis of the definitions of income and expenditure mentioned earlier. The size of the apparent "dissaving", cannot be taken as an indication of the relative ability to save of families in those income classes.

(e) Size distribution of income by rural families

A vast majority of the Thai population are living in agricultural household, but there is little information on their level of living. There are a number of reports on

farm management survey, but very few of these contain information on distribution of their income and wealth.

There are two sets of survey data available for the distribution of family income in rural areas i.e. the 1962/63 and the 1970 surveys. The estimates based on the two sets of data are compared and the results are shown in Table VIII.

TABLE VIII (A)
Size Distribution of Family Income: Rural Areas^{a/} 1962-63

Income class (baht per year)	Midpoint	Number of families (%)	Percentage of accumulated number of families	Percentage of accumulated income
under 3,000	2,250	56.7	56.70	26.35
3,000- 6,000	4,500	21.6	78.30	46.47
6,000-12,000	9,000	16.2	94.50	76.76
12,000-18,000	15,000	3.4	97.90	87.34
18,000-24,000	21,000	1.2	99.10	92.53
24,000-30,000	27,000	0.3	99.40	94.19
30,000-36,000	33,000	0.2	99.60	95.64
36,000-48,000	42,000	0.2	99.80	97.30
48,000-60,000	54,000	0.1	99.90	98.55
60,000 and over	67,500	0.1	100.00	100.00
mean income	4,820			

Source: National Statistical Office, *Household Expenditure Survey 1962-63 Whole Kingdom*, table 60.

^{a/} Outside municipal area of 26 provinces.

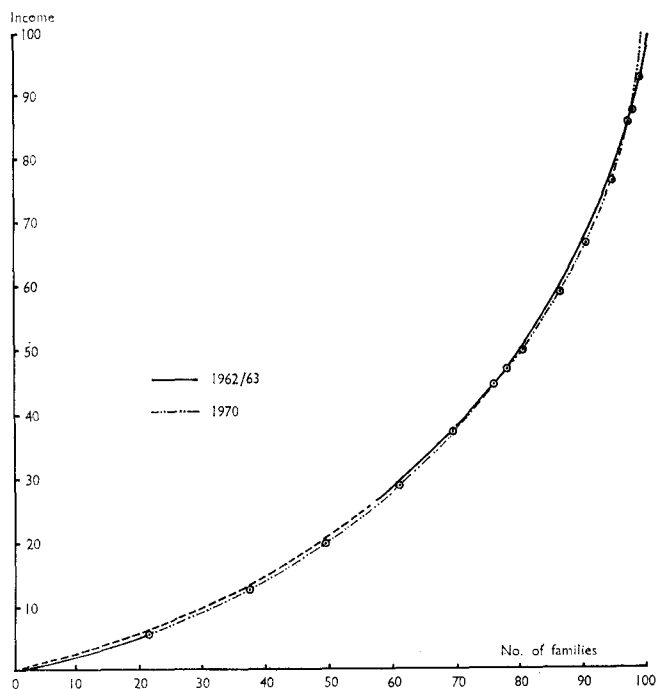
TABLE VIII (B)
Size Distribution of Family Income: Rural Areas^{a/} 1970

Income class (baht per year)	Midpoint	Number of families (%)	Percentage of accumulated number of families	Percentage of accumulated income
under 3,000	2,500	21.79	21.79	6.18
3,000- 4,500	3,750	15.57	37.36	12.81
4,500- 6,000	5,250	12.15	49.51	20.06
6,000- 7,500	6,750	11.21	60.72	28.65
7,500- 9,000	8,250	8.80	69.52	36.89
9,000-10,000	9,750	6.97	76.49	44.61
10,500-12,000	11,250	3.99	80.48	49.71
12,000-15,000	13,500	6.16	86.64	59.15
15,000-18,000	16,500	4.06	90.70	66.76
18,000-33,000	25,000	6.53	97.23	85.30
33,000 and over	46,747	2.77	100.00	100.00
mean income	8,806			

Source: Preliminary results of the 1970 *Household Expenditure Survey*, (in mimeo.)

^{a/} Outside municipal areas.

Figure 5
Distribution of Income of Rural Families 1962-63 and 1970



Source: Table VIII (A) and (B).

TABLE IX
Income Share of Percentile Groups: Family Income, Rural Areas, 1962-63 and 1970

Percentile group in ascending order	Percentage income share	
	1962-63	1970
0- 10 per cent	3.0	2.5
11- 20 per cent	3.0	3.0
21- 30 per cent	3.5	3.5
31- 40 per cent	5.5	5.0
41- 50 per cent	6.0	6.5
51- 60 per cent	7.5	7.5
61- 70 per cent	9.0	9.5
71- 80 per cent	11.5	11.5
81- 90 per cent	17.0	16.5
91-100 per cent	34.0	34.5
All groups	100.0	100.0
Bottom 20 per cent	6.0	5.5
Bottom 40 per cent	15.0	14.0
Bottom 60 per cent	28.5	28.0
Top 20 per cent	51.0	51.0
Top 10 per cent	34.0	34.5
Top 5 per cent	22.0	22.0
Top 2.5 per cent	15.0	13.5
Concentration ratio	43.60	44.30

Source: Table VIII and Figure 5.

The summary of the measurements for the degree of concentration is shown in Table IX.

Results show that there has been little change in the pattern of income distribution of the rural population during the last seven years, but the mean income has almost doubled. Although the change in the pattern of income distribution is slight, it has some interesting features. The income of rural families are becoming more unequal in contrast to that of urban families that are less unequal during the same period. Further, the share of the lower income brackets has decreased, so has the share of the top income brackets. Those who gain are the middle income families.

The relatively stable pattern of income distribution of rural families could be explained by the fact that the occupational structure in the rural economy has changed little compared with that of the urban economy. Agricultural diversification and double cropping practices may account for the relative larger share of the middle income farming families. Based on observations, although not yet tested, farmers in the middle income groups are generally more willing to accept new technology and are more responsive to market forces than other groups.

It is interesting to make a comparison of the size and pattern of income distribution between the urban and rural families. Refer back to Tables I (A), I (B) and VIII (A), VIII (B) which show the mean income of urban and rural families, a summary of the two tables may be reproduced again as follows:

Year	Mean income of rural families	Mean income of urban families	Ratio of rural/urban
1962-63	4,820 baht	11,341 baht	42.50 per cent
1970	8,806 baht	21,608 baht	40.77 per cent

Figures clearly show that the urban-rural income differential is getting wider, over the seven year period, the income of rural families decreases from 42.50 per cent to 40.77 per cent of the average income of urban families.

However, before a comparison of the pattern of income distribution between the urban and the rural groups can be made, some adjustments to the average income of the various income classes are necessary. This is to eliminate the influence of family size on the average income of those income brackets. It was found that the pattern of

TABLE X (A)

Distribution of Family Income, with Family Size, 1962-63 (A) Urban Families

Income class (baht per year)	Size of family (persons)	Income class midpoint	Number of families (%)	Percentage of accumulated number of families	Percentage of accumulated income
under 3,000	4.0	2,250	17.7	17.70	4.05
3,000- 6,000	4.4	4,500	18.7	36.40	12.61
6,000-12,000	5.3	9,000	34.2	70.60	43.92
12,000-18,000	6.4	15,000	14.7	85.30	66.35
18,000 and over	7.2	22,500	14.7	100.00	100.00
mean income	9,830				

distribution of family size among the income brackets differed as between the urban and the rural groups; one of them would have to be brought to the same basis as the other. It was deemed appropriate that the comparison would be made under an assumption that the size of the family in any income bracket of the rural population is the same as that of the urban population. The data for rural family income were then adjusted accordingly. It is somewhat unfortunate that only the 1962/63 survey results have information on family size, the 1970 survey results are not yet available. The estimates are shown in Table X (A) and (B).

TABLE X (B)
Distribution of Family Income, with Family size 1962-63 (B) Rural Families

Income class (baht per year)	Size of family (persons)		Adjusted income class midpoint	Number of families (%)	Percentage of accumulated number of families	Percentage of accumulated income
	Original	Adjusted				
under 3,000	5.3	4.0	1,698	56.7	56.70	24.05
3,000- 6,000	5.5	4.4	3,600	21.6	78.30	43.47
6,000-12,000	5.9	5.3	8,085	16.2	94.50	76.19
12,000-18,000	6.7	6.4	14,328	3.4	97.90	88.36
18,000 and over	7.3	7.2	22,192	2.1	100.00	100.00

Source: National Statistical Office, *Household Expenditure Survey 1962-63 Whole Kingdom*, tables 4.3, 4.4 for family size figures, table 6 for family income figures.

TABLE XI
Income Share of Percentile Groups: Family Income, Urban and Rural Areas, 1962-63

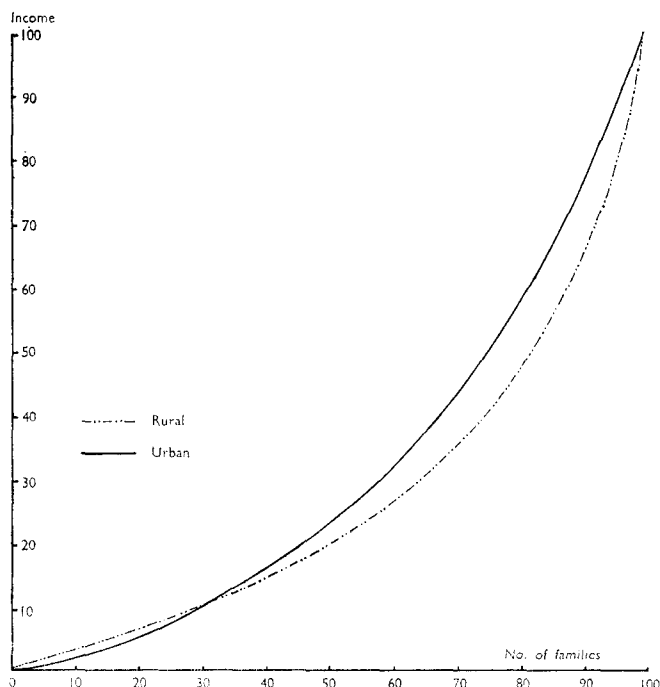
Percentile groups in ascending order	Percentage share of income	
	Urban	Rural
0- 10 per cent	2.0	2.5
11- 20 per cent	2.5	3.5
21- 30 per cent	4.5	3.5
31- 40 per cent	6.5	4.5
41- 50 per cent	7.0	5.5
51- 60 per cent	8.5	6.5
61- 70 per cent	11.0	9.0
71- 80 per cent	15.0	11.5
81- 90 per cent	18.0	18.0
91-100 per cent	25.0	35.5
All groups	100.0	100.0
Bottom 20 per cent	4.5	6.0
Bottom 40 per cent	15.5	14.0
Top 20 per cent	43.0	53.5
Top 10 per cent	25.0	35.5
Top 5 per cent	12.5	22.5
Concentration ratio	38.72	44.86

Source: Table X and Figure 6.

The comparison shows that the average family income of rural population is less than half of that of urban population. The distributions also show a relatively higher

Figure 6

Distribution of Family Income, Urban and Rural Families, 1962-63



Source: Table X (A) and (B).

degree of inequality among rural families. The extremely low income brackets in the rural areas, however, appear to have a slightly larger share of income than do the urban poor, but it is the shares of middle income classes that the rural families seem to have relatively smaller shares than the urban families. A higher percentage of income is also concentrated in the hands of the rural rich. If we judge the potential economic welfare by the size of average family income together with the degree of equality in the distribution of the income, it can be said that the rural population as a whole could enjoy much less economic well-being than the urban population.

(f) *Distribution of wealth in the rural sector*

One of the most important forms of wealth in the rural sector is the agricultural land, and the pattern of distribution of land ownership can be used as a good approximation of distribution of wealth among the rural population. In the 1963 survey of Agricultural Census, the National Statistical Office makes a distinction between "holding" and "ownership". The term holding refers to all parcels of land utilized in the farm operation under the management of one single holder, or farm operator, regardless of occupation right. Thus a holding constitutes a "farm", and the size of the holding is the size of the farming unit. The term "land owned" refers to the piece of land in the holding that legally belongs to the farm operator and is being cultivated by the farm operator himself. Therefore a holding includes land owned as well as land rented.

There are data on the distribution of holdings and distribution of land owned by size of holdings. The estimates and measures for the degree of concentration are shown in the table and figure below:—

TABLE XII
Distribution of Land Holdings and Land Owned by Size of Holdings, Whole Kingdom, 1963

Size of holdings (rai)	Land holdings		Land owned	
	Accumulated number of holdings (%)	Accumulated area of land (%)	Accumulated number of holdings (%)	Accumulated area of land (%)
Less than 2	4.0	0.1	2.7	0.1
2 - 4	10.3	0.8	8.4	0.8
4 - 6	18.6	2.5	16.2	2.4
6 - 8	26.3	4.8	23.8	4.6
8 - 10	32.8	7.3	30.4	7.1
10 - 15	47.9	15.5	45.7	15.1
15 - 20	58.9	24.0	57.1	23.6
20 - 25	68.2	33.3	66.7	32.8
25 - 30	75.4	42.1	74.2	41.7
30 - 35	81.4	50.8	80.4	50.3
35 - 40	85.1	57.1	84.4	56.7
40 - 45	88.5	63.7	88.0	63.3
45 - 50	90.7	68.4	90.3	68.1
50 - 55	93.3	74.5	93.0	74.2
55 - 60	94.6	77.8	94.3	77.6
60 - 100	98.9	92.2	98.8	92.1
100 - 140	99.7	96.4	99.6	96.3
140 and over	100.0	100.0	100.0	100.0

Source: National Statistical Office, *Census of Agriculture 1963*, table 1, pp. 12-13.

Figure 7
Size Distribution of Land Holdings and Land Owned by Size of Holdings,
Whole Kingdom, 1963

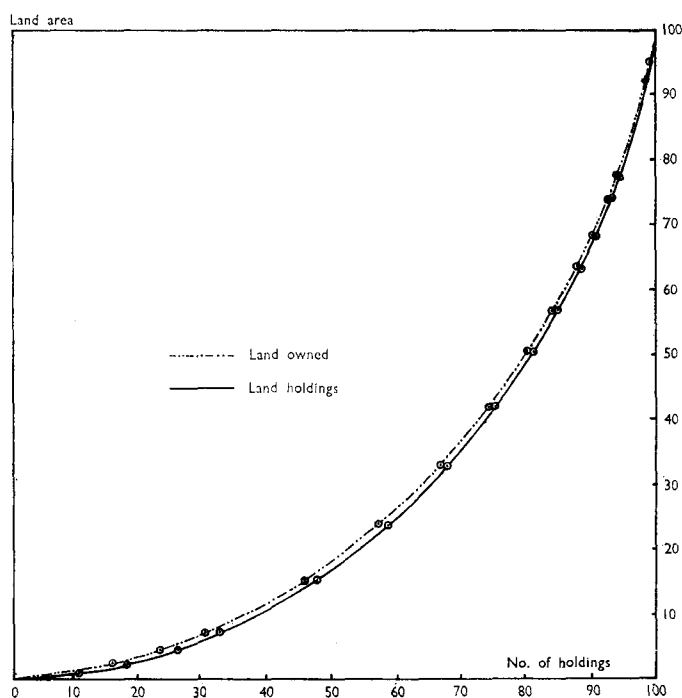


TABLE XIII
Land Share of Percentile Groups : Land Holdings and Land Owned, Whole Kingdom, 1963

Percentile groups of holdings in ascending order	Percentage share	
	Land holdings	Land owned
0- 10 per cent	1.0	1.0
10- 20 per cent	2.0	2.5
20- 30 per cent	3.0	3.5
30- 40 per cent	4.5	4.5
40- 50 per cent	6.5	6.5
50- 60 per cent	7.5	8.0
60- 70 per cent	11.0	10.5
70- 80 per cent	13.0	13.5
80- 90 per cent	17.0	17.5
90-100 per cent	34.0	32.5
Bottom 20 per cent	3.0	3.5
Bottom 40 per cent	10.5	11.5
Bottom 60 per cent	24.5	26.0
Top 20 per cent	51.5	50.0
Top 10 per cent	34.0	32.5
Top 5 per cent	21.0	20.5
Concentration ratio	48.18	46.36

Source: Table XII and Figure 7.

A quick inspection gives one an impression of a highly unequal distribution of wealth in the rural sector, each successive percentile group has a larger percentage share of the total area of land as one moves from the bottom bracket upward. The bottom 10 per cent of the farms hold only 1.0 per cent of the total land area while the top 10 per cent group of the largest farms hold 34 per cent of the total land.

An interesting finding is the relatively higher degree of concentration in the distribution of land holdings than land owned. This suggests that there may be a relatively larger number of farms, i.e. holdings, in the small farm categories than the number of land owners in these categories. In other words, we are led to expect that a considerable number of farmers in these categories are operating on land which they do not own, i.e. rented land. This means that the rented land constitutes a relatively large proportion of the total area of the holding of farmers in these small farm brackets. There are data available for the estimation of the percentage of rented land area to the total area of the holding in different sizes of holdings. The results are shown in Table XIV.

Figures in the table clearly show that the percentage of rented land in small holdings is larger than that of the larger holdings and the pattern is definite. This finding has an important implication. It means that the distribution of wealth among the rural population is highly unequal. Small farmers own proportionately less of the land on which they are farming than do the larger farmers. As the tenant farmer does not receive the full share of the product of the land, his already low income will be lower. This is a force that is operating to make income distribution among the rural population more unequal. Our finding that income of the rural families are more unequal than that of the urban families and the degree of inequality is getting larger, therefore, may be attributed, among other things, to the inequality of the land ownership.

(g) *Distribution of income and wealth among rice farmers*

Within the rural sector there are still a variety of occupations. It may be interesting to examine the level of average income and income distribution within some occupations or rather within some types of farming. There is some information on income and income distribution of rice growing families in the central region. The estimates may be presented in table XV.

TABLE XIV
Percentage of Rented Land to Total Area of the Holding

Size of holdings (rai)	Percentage of rented land (%)
Less than 2	30.36
2 — 4	25.14
4 — 6	22.49
6 — 8	18.97
8 — 10	19.06
10 — 15	16.92
15 — 20	14.77
20 — 25	16.30
25 — 30	13.98
30 — 35	15.50
35 — 40	13.21
40 — 45	14.80
45 — 50	12.72
50 — 55	15.13
55 — 60	12.16
60 — 100	13.95
100 — 140	13.32
140 and over	13.74
Whole Kingdom	14.92

Source: National Statistical Office, op. cit., table 1, pp. 12–13.

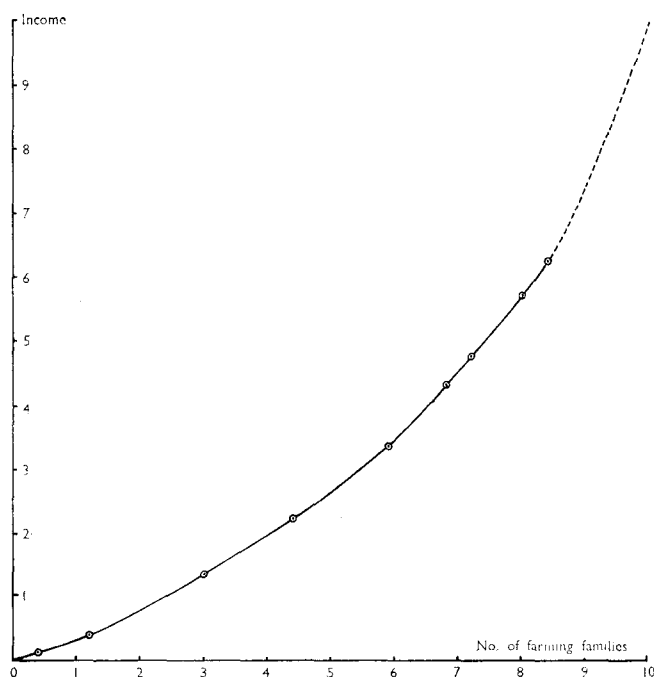
TABLE XV
Size Distribution of Income of Rice Farming Families: Central Region,^{a/} 1963

Income class (baht per year)	Total income	Number of families	Percentage of accumulated number of families	Percentage of accumulated income
Less than 1,000	—	—	—	—
1,000 — 2,000	2,979	2	4.00	0.85
2,000 — 3,000	10,820	6	12.00	3.94
3,000 — 4,000	32,210	15	30.00	13.12
4,000 — 5,000	32,354	22	44.00	22.35
5,000 — 6,000	39,080	29	58.00	33.50
6,000 — 7,000	33,840	34	68.00	43.15
7,000 — 8,000	15,200	36	72.00	47.48
8,000 — 9,000	33,053	40	80.00	56.91
9,000 — 10,000	19,400	42	84.00	62.44
10,000 and over	131,680	50	100.00	100.00
Mean income	7,012			

Source: Department of Land Cooperatives, *Report on Economic Condition of Farmers in Tambol Thamamool, Changwad Chainart, 1963*, (Thai), table 13, p. 18

a/ Samples taken from Tambol Thamamool, Chainart Province.

Figure 8
Distribution of Income of Rice Farmers in Chainart, 1963



Source: Table XV.

TABLE XVI
Income Share of Percentile Groups: Rice Farming Families in Central Region,^{a/} 1963

Percentile group	Income share (%)
0- 10 per cent	3.0
11- 20 per cent	5.0
21- 30 per cent	5.5
31- 40 per cent	6.0
41- 50 per cent	6.5
51- 60 per cent	8.0
61- 70 per cent	11.0
71- 80 per cent	12.0
81- 90 per cent	16.0
91-100 per cent	27.0
All groups	100.0
Bottom 20 per cent	8.0
Bottom 40 per cent	19.5
Bottom 60 per cent	34.0
Top 20 per cent	43.0
Top 10 per cent	27.0
Top 5 per cent	13.0
Concentration ratio	34.20

Source: Table XV and Figure 8.

^{a/} Chainart province.

A summary of the measurements of the degree of concentration is shown in the Table XVI.

There appears to be somewhat less concentration of income among rice farmers than that of the rural sector as a whole, due apparently to the larger crop diversification on smaller farms. The relatively large inequality of family income within the whole rural sector could be accounted for by the diversity of crops and livestock produced by farmers of different regions, within the same crop, there would be more uniformity in the economic status, as one might expect.

Distribution of Wealth of Rice Farmers

The inequality of income among rural families is, to a large extent, attributed to the inequality of ownership of agricultural land and related assets more than the inequality in ownership of human capital such as education and skills.

There is a set of information on the distribution of land ownership, by size of holdings of rice farmers in eleven provinces in the central plain, supplied by the Department of Land Development. The analysis is shown in the following table.

TABLE XVII

Size Distribution of Land Holdings of Rice Farmers in Central Plain,^{14/} 1965

Size of holding (rai per farm)	Midpoint	Number of farms	Percentage of accumulated number of farms	Percentage of accumulated land area
Under 20	15.0	3	3.00	0.65
20 - 40	30.0	21	24.00	9.87
40 - 60	50.0	21	45.00	25.24
60 - 80	70.0	19	64.00	44.70
80 - 100	90.0	12	76.00	60.50
100 and over	112.5	24	100.00	100.00
Mean holding	68.35			

Source: Department of Land Development, *Relationships between Land Ownership and Conditions of Production of Rice Farmers in Eleven Changwads in the Central Plain, 1965*, (Thai), table 2, p. 53.

There appears to be relatively low concentration of land ownership; an interesting point is that it is less concentrated than the distribution of family farm income.^{14/} It suggests that the size of holding is not a decisive or overwhelming factor determining the size of income; other factors may be equally important such as soil fertility, the use of fertilizers and the cultivation methods.

Not only land constitutes wealth of farmers but also other kinds of productive assets such as farm tools, draft animals and transport equipment. In the Chainart farm survey there is some useful information on this respect.

^{14/} The concentration ratio of land ownership of rice farmers in the Chainart sample is 30.96, compared with the concentration ratio of income of 34.38 from the same sample.

Figure 9
Size Distribution of Land Holdings of Rice Farmers
in 11 provinces in the Central Plains, 1965

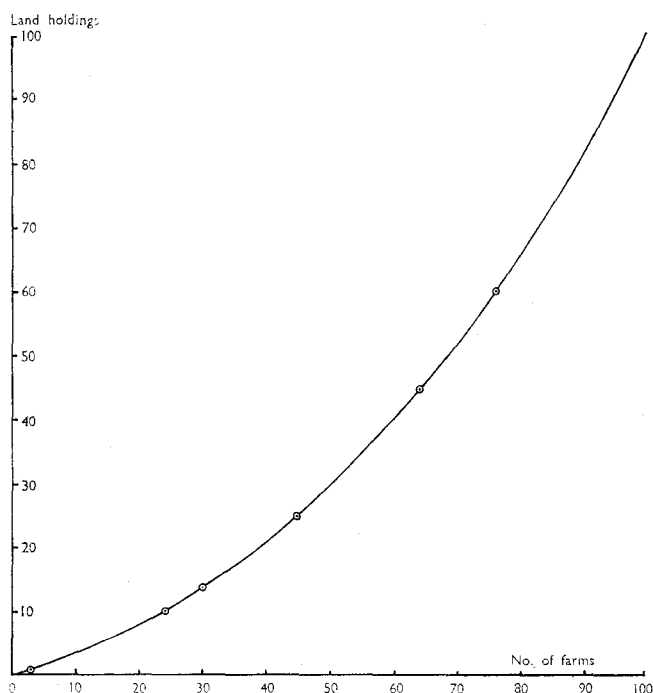


TABLE XVIII

Share of Land Holdings of Percentile Groups, Rice Farmers in Central Plains,^{a/} 1965

Percentile group		Percentage share
0- 10	per cent	3.5
11- 20	per cent	4.5
21- 30	per cent	6.0
31- 40	per cent	7.0
41- 50	per cent	8.5
51- 60	per cent	10.5
61- 70	per cent	12.0
71- 80	per cent	14.0
81- 90	per cent	16.0
91-100	per cent	18.0
All groups		100.0
Bottom 20 per cent		8.0
Bottom 40 per cent		21.0
Bottom 60 per cent		40.0
Top 20 per cent		34.0
Top 10 per cent		18.0
Top 5 per cent		9.0
Concentration ratio		26.90

Source: Table XVII and Figure 9.

^{a/} Eleven provinces in central plain.

TABLE XIX

Distribution of farm assets^{a/} of rice farmers in Chainart, 1963

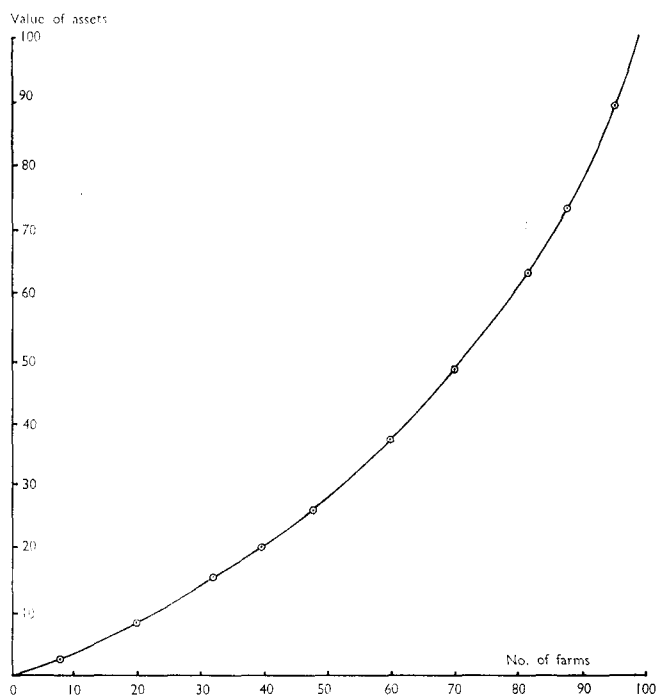
Value of asset per farm (baht)	no. of farms	Percentage of accumulated no. of farms	Percentage of accumulated value of assets
15,419	4	8.00	2.50
26,141	16	32.00	15.20
33,930	24	48.00	26.18
43,833	30	60.00	36.83
54,675	35	70.00	47.90
63,362	41	82.00	63.29
85,222	44	88.00	73.64
95,382	48	96.00	89.08
134,859	50	100.00	100.00
Mean value	49,405		

Source: Department of Land Co-operatives, *Report on Economic Conditions of Farmers in Tambol Thamamool, Changwad Chainart 1963*, (Thai), table 5, p. 9.

^{a/} Include value of land, farm buildings and residence.

Figure 10

Distribution of Value of Assets of Rice Farmers in Chainart, 1963



Source: Table XVII.

The measurements of the degree of concentration are as follow:-

TABLE XX

Share of Assets of Percentile Groups of Rice Farmers in Chainart, 1963

Percentile group	Percentage share
0- 10 (%)	3.0
11- 20	5.0
21- 30	6.0
31- 40	6.0
41- 50	7.5
51- 60	9.5
61- 70	11.0
71- 80	12.0
81- 90	16.0
91-100	24.0
All groups	100.00
Bottom 20 (%)	8.0
Bottom 40	20.0
Bottom 60	37.0
Top 20	40.0
Top 10	24.0
Top 5	13.5
Concentration ratio	31.54

Source: Table XIX and Figure 10.

The distribution of total farm assets, including the value of land is more concentrated than the distribution of land holdings by size but still less concentrated than the distribution of income of these farmers. Parts of the difference in farm income must be accounted for by variation in the fertility of the soils, water supply, the use of fertilizers and the cultivation practices.

III. SOCIAL AND INSTITUTIONAL FACTORS AFFECTING INCOME DISTRIBUTION

In the preceding chapter some economic factors influencing the pattern of income distribution have been discussed. There is another group of factors, nevertheless, that can influence the income distribution and their impact can be equally significant. In this chapter, some of the more important social and institutional factors will be discussed.

(1) *Economic and social mobility*

T. Morgan expresses a view that inequality in the distribution of income and wealth is a function of immobility.^{15/} Obviously if there are obstacles to the movement of individuals in response to economic opportunity, the gap between the high income brackets and the low income brackets will not get narrower. In fact, it will get larger.

Mobility here entails both economic and geographical mobility, they often go hand in hand.

(a) *Social and economic mobility.* One of the most important factors determining the degree of mobility or equality of opportunity is opportunity for education. High level of education implies higher earning power and, hence, income. The educational pyramid of the Thai society appears as follows:-

^{15/} T. Morgan, "Income Distribution in Developed and Underdeveloped Countries," *Economic Journal*, March 1956, p. 161.

TABLE XXI
Educational Attainments of the Population by Age Groups, 1970

Age and education level	Number of students as percentage of population in the same group
3- 6 years (Kindergarten)	1.92
7-10 years (early primary)	100.00
11-13 years (advanced primary)	39.74
14-16 years (early secondary)	18.76
17-19 years (advanced secondary)	6.61
20-24 years (university)	2.33

Source: National Education Council.

There appears to be a large drop in the percentage of children in school between the "early primary" and "advanced primary" levels, more than 60 per cent has dropped out. After that level, about half the number drops out along the way until there is only 2.3 per cent left when it reaches university level. An important point here is that it is mainly the secondary school graduates that constitute the new recruits to the skilled labour force and who subsequently occupy the middle-income brackets. As it is now more than 80 per cent of children leave school at primary level and enter the job market. If the main obstacle for higher education is the economic status of parents, this pattern of school leaving will perpetuate the situation. Primary school graduates can hope only for relatively unskilled, low-paid jobs; they will therefore fall back into the same socio-economic class of their parents, and 80 per cent of them do this. This suggests that the degree of mobility through formal education is not high.

At the university level, inequality of opportunity still exists, it has been found that children from upper middle-class urban families have much higher probability of being admitted to a university than children from the poorer rural families.^{16/}

(b) *Geographical mobility.* It has been found that geographical mobility in the Thai economy is relatively high. Thanavit Supavanich in his M.S. thesis quotes an ILO report on regional migration of workers in Thailand saying that "...only 20 per cent of the persons who were interviewed during the dry season had an approximate idea of the time of their return home while 80 per cent had no definite plan. Workers interviewed during the rainy season who had not decided when they would return home was even higher, i.e. 96 per cent. It appears that most of interviewed migrants are not seasonal; they are ready to stay in town provided they find employment and are willing to return to their villages should the economic outlook become unfavourable in town."

T. Supavanich^{17/} also found that there were at least three factors, e.g. age, education and training significantly affected the geographical mobility of workers. The younger and more educated tend to be more mobile. In another study by the Department of Labour it was found that workers with secondary education tended to look for jobs only in urban areas while those with lower education tended to go for construction job or work as employees in small business regardless of location.^{18/}

^{16/} Udom Kerdpibule, "Education and Social Stratification—A Thai Study," *mimeo*, Kasetsart University, November 1970.

^{17/} T. Supavanich, "Effects of Age, Education Training and Income on Labour Market Behaviour and Attitudes of Thai Workers," unpublished M.S. thesis, University of Wisconsin, Madison, 1970, p.16.

^{18/} Porn Udompongs, "Labour Problems in Economic Development," *mimeo* (Thai), Department of Labour, February 1971.

(2) *Government fiscal practices*

Government actions with respect to taxation and expenditure can significantly alter the picture of income distribution, it is highly desirable to examine the fiscal practices of the Thai Government.

(a) *Taxation.* Taxation can affect the distribution of individual income after tax, the direction of the change depends on the incidence of the tax, i.e., which income brackets bear most of the burden of the tax. Four types of taxes will be examined.

(i) *The Thai personal income tax structure and its impact.* The redistributive effect of the income tax depends on the levels of personal exemptions and the degree of progressivity. The more exemptions given, the more the low-income individual benefit, i.e., their tax liability will be less. The more the tax rates are progressive, the relatively larger burden to the high income brackets. The Thai personal income tax structure will be compared with that of other countries on the above bases.

If one defines the level of personal exemption as the proportion of income that goes to exemption some inter-country comparison can be made. But as personal exemptions are the same for individuals of any income, some arbitrary base has to be used to represent the "typical" income. A.Q. Yoinco and R.F. Trinidad have used the per capita income of the country as the base and used a "family" as a unit rather than an individual. The hypothetical family used is that of a married tax payer with three dependents. Their results are shown in the following table.

TABLE XXII
Percentage of Personal Exemptions^{a/} in Some Countries

Country	Percentage
South Vietnam	89.54
Philippines	80.00
Japan	79.59
Malaysia	68.15
India	64.28
Thailand	51.22
Taiwan	45.65

Source: A.Q. Yoinco and R.F. Trinidad, *Fiscal Systems and Practices in Asian Countries*, p. 18.

The level of personal exemption of the Thai personal income tax is among the lowest. Judged on this ground, it appears that the Thai income tax structure is not designed primarily as a means to redistribute income in favour of low-income individuals.

The degree of progressivity is the degree to which income is taxed at various rates as we move up from the lowest to the highest income class. A large number of taxable income brackets coupled with a large range of tax rates constitute a high degree of progressivity.

It appears that the number of taxable income brackets for Thailand is relatively small; more important is the high tax rate on the lowest income bracket and relatively low rate for the highest income bracket.

TABLE XXIII
Progressivity of Income Tax of Some Countries

Country	Number of taxable income brackets	Tax rates	
		Lowest	Highest
Taiwan	12	3	40
India	14	3	72.5
Japan	15	8	75
Malaysia	13	6	45
Philippines	23	3	60
Singapore	13	5	55
South Korea	4	7	35
Thailand	10	10	50

Source: A.Q. Yoingco and R.F. Tinidad, *op. cit.*, table 7, p. 28.

With latest set of information on income tax proceeds and the number of tax payers in each income class, supplied by the Revenue Department, a comparison of the distribution of individual personal income, i.e. before tax and the distribution of individual disposable income, i.e. after tax can be made.

Despite many shortcomings in the tax structure, the income tax is fairly effective as a means of narrowing the income inequality. The distribution of disposable income, i.e. after tax, shows a lower degree of concentration than the distribution of personal gross income, i.e. before tax.

TABLE XXIV
Distribution of Individual Income, 1967(A) Before Tax^{a/}

Income class (net income)	No. of individuals	Aggregate gross income	Percentage of accumulated no. of individuals	Percentage of accumulated income
(baht)		(million baht)		
(1) less than 5,000	516,425	4,899.61	59.59	28.30
(2) 5,000— 10,000	153,476	2,269.02	79.30	41.41
(3) 10,000— 20,000	91,361	2,091.53	87.84	53.50
(4) 20,000— 30,000	36,491	1,249.19	92.05	60.71
(5) 30,000— 40,000	19,238	882.53	94.27	65.81
(6) 40,000— 50,000	12,469	720.12	95.71	69.97
(7) 50,000— 100,000	22,964	1,953.26	98.36	81.25
(8) 100,000— 150,000	6,291	846.72	99.09	86.15
(9) 150,000— 200,000	2,860	500.82	99.42	89.04
(10) 200,000— 250,000	1,655	350.00	99.61	91.06
(11) 250,000— 300,000	901	238.13	99.71	92.44
(12) 300,000— 350,000	581	199.80	99.78	93.59
(13) 350,000— 400,000	399	126.03	99.83	94.32
(14) 400,000— 500,000	529	224.77	99.89	95.62
(15) 500,000—1,000,000	693	456.87	99.97	98.26
(16) 1,000,000—2,000,000	191	249.99	99.99	99.70
(17) 2,000,000—3,000,000	35	51.78	100.00	100.00

^{a/} Gross income before personal deductions and cost expense deductions.

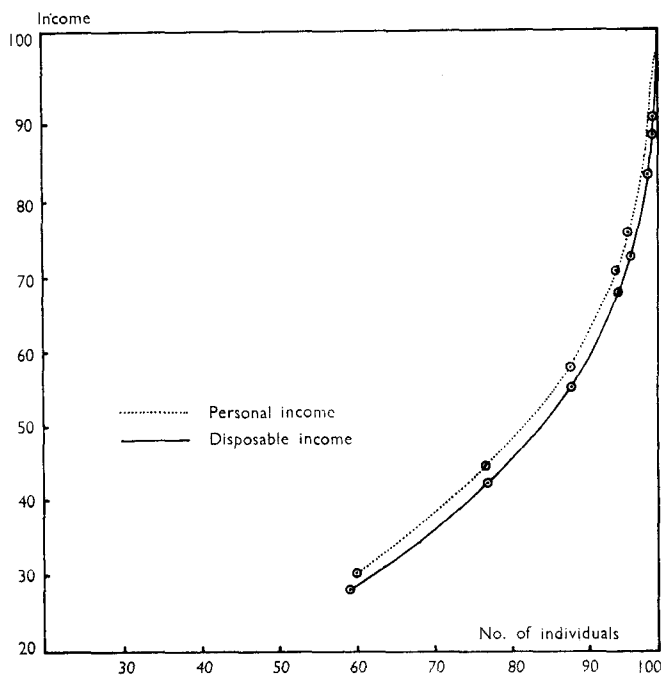
(B) After Tax^{a/}

Income class (net income)	No. of individuals	Aggregate disposable income	Percentage of accumulated no. of individuals	Percentage of accumulated aggregate income
(baht)		(million baht)		
(1) less than 5,000	516,425	4,838.90	59.59	29.85
(2) 5,000— 10,000	153,476	7,042.23	77.30	43.44
(3) 10,000— 20,000	91,361	9,036.07	87.84	55.74
(4) 20,000— 30,000	36,491	10,210.39	92.05	62.98
(5) 30,000— 40,000	19,239	11,035.25	94.27	68.07
(6) 40,000— 50,000	12,469	11,706.32	95.71	72.21
(7) 50,000— 100,000	22,964	13,514.03	98.36	83.36
(8) 100,000— 150,000	6,291	14,280.05	99.09	88.09
(9) 150,000— 200,000	2,860	14,720.75	99.42	90.81
(10) 200,000— 200,000	1,659	15,020.08	99.61	92.65
(11) 250,000— 300,000	901	15,220.25	99.71	93.89
(12) 300,000— 350,000	581	15,387.21	99.78	94.92
(13) 350,000— 400,000	399	15,485.09	99.83	95.52
(14) 400,000— 500,000	529	15,678.90	99.89	96.72
(15) 500,000—1,000,000	693	16,016.49	99.97	98.80
(16) 1,000,000—2,000,000	191	16,182.67	99.99	99.82
(17) 2,000,000—3,000,000	35	16,210.81	100.00	100.00

Source: The Revenue Department.

^{a/} Gross income less tax. Gross income includes personal deductions and costs.

Figure 11
Distribution of Individual Income



Source: Table XXIV.

Some of the units of measurements are as follows:—

TABLE XXV

Income Share of Percentile Groups: Individual Income. Whole Kingdom, 1967

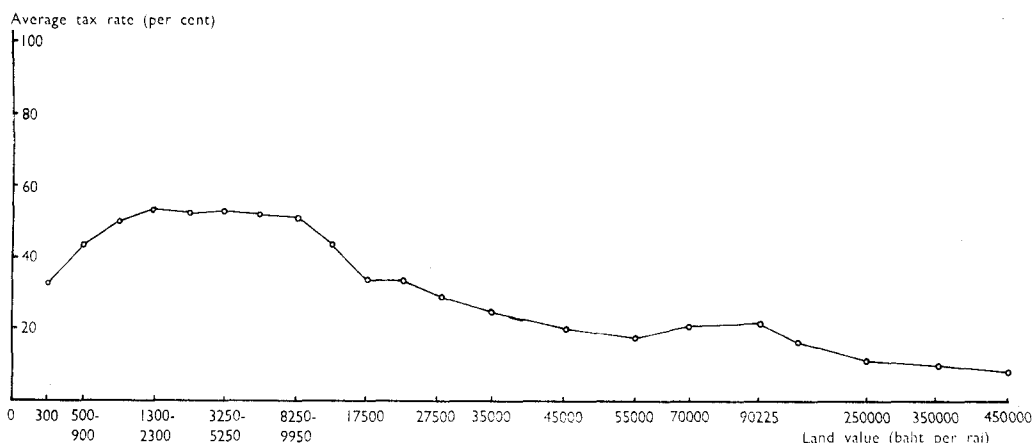
Percentile group	Percentage share	
	Personal income	Disposable income
Bottom 60%	28.0	29.5
Top 20%	55.5	53.5
Top 10%	43.5	40.5
Top 5%	32.0	29.5

Source: Table XXIV and Figure 11.

The income share of the bottom 60% increases 1.5 per cent and the shares of the top income brackets decrease, especially the top 10 per cent, their income share has decreased by 3 per cent.

(ii) *Land tax.* There is a land tax, called “Local Development Tax” collected by local government. It is levied on a specific basis, but the rate per unit area increases with the value of land varies from 200 baht per rai to 400 baht per rai. It seems, superficially, to have some degree of progressiveness, but when the specific rate is converted into ad valorem equivalent, the picture comes out quite different.

Figure 12
Rates of Land Tax
(Local Development Tax)



It is quite obvious that the land tax rates are highly regressive, the owners of high-value land pay relatively low rate. This will aggravate the degree of inequality of ownership of wealth, and land is the most popular form of wealth among the Thai population. Distribution of income will be affected in the same manner.

(iii) *Tax on exports.* Since 1955 the Thai Government has imposed a tax on the exportation of rice, called the rice export premium. The tax is collected from rice exporters on specific basis and the rate varies according to the quality grades of rice. It

is an indirect tax and the burden of the tax can be shifted back to rice growers in the form of lower price received by farmers. At the same time, by maintaining low price in domestic market, the cost of urban families is kept low and helps maintain a high level of real income of these urban people. This has an effect of transferring real income from the rural population to the urban population. However, some parts of the tax money collected from the farmers are transferred back to them in the form of public investment in irrigation and agricultural extension services. Nevertheless, this form of government expenditure is much less than the amount of tax collected from the rural sector. For example, in 1964 the amount of rice premium collected was 1,287 million baht but the public investment in agriculture was only 850 million baht, or 66 per cent.^{19/} Furthermore, this tax is paid by rice farmers only, but the benefits from government investment in agriculture are received by other agriculturalists also. Therefore, there is some transfer of real income within the rural sector as well.

The transfer of real income from rural to urban population will contribute to a tendency toward a wider rural-urban income differentials, which, in the earlier chapter, were found to be substantial. It was estimated that if the tax was completely removed, income of rice growers would increase by 13 per cent.^{20/} Dan Usher also found that with the tax still in effect the average income per man in agriculture was about one-tenth of the non-agriculture; after adjustment for the effect of the tax, the ratio increased to about one-third.^{21/}

(iv) *Tax on imports.* Tax rates on imported items can be designed to make the burden fall more heavily on high income consumers, especially the luxury items. However, the Government may find itself in a difficult situation; the main purpose of taxing imports is still the revenue yield and to maximize the yield, the Government would have to tax

TABLE XXVI

Some Selected Items of Imports and Their Import Duties, 1970

Items used by all income classes		Items used mainly by higher income classes	
Item	Rate (%)	Item	Rate (%)
Milk	40	Wine	100
Infant food	10	Perfumed soap	100
Antibiotics	30	Washing machine	80
Cotton clothing	60	Colour T.V.	80
Automotive parts for trucks and buses	30	Air conditioner	80
Cotton fabric	35	Record player	50
Footwears	30	Electric shaver	30
Sewing machine	20	Wrist watches	40
		Pearl	20
		Jewellery	30

Sources: Department of Commercial Intelligence, *Commercial Directory, Thailand, 1967*, Bangkok Post, July 2, 1970.

^{19/} M. Cordon, "The Exchange Rate System and the Taxation of Trade," in T.H.Silcock (ed), *Thailand: Social and Economic Studies in Development*, Canberra, Australian National University Press, 1967, p. 166.

^{20/} Udom Kerdpibule, "An Alternative Commercial Policy for Thailand," unpublished Ph.D. dissertation, University of Wisconsin, Madison, 1970, p. 88.

^{21/} Dan Usher, "Income as a Measurement for Productivity, etc.," *Economica*, November 1966, p. 432.

more heavily on items that have relatively inelastic demand and this usually means non-luxury items. The tax rates on some selected items of imports will be examined. The items of imports are divided into two groups, one representing items used by all income brackets including the low income people and another is the collection of items usually consumed by high income people and the tax rates are compared.

There is some, but not clear indication that the Government has used the import duty as a means of taxing the rich. It is worth noticing that tax rates on some non-luxury items like cotton fabric, footwears and milk are higher than taxes on luxury items such as electric shavers, pearl and jewellery. This reflects the concern of the government over revenue yield and protection of domestic industries rather than on equality of the tax burden.

(b) *Government spending and transfers*

Another way in which the Government can redistribute income is through spending on public amenities and social welfare services. These items of spending represent a transfer of real income from the high income people, via the Government, to the low-income people, since these services are given free of charge or priced below their average costs. The relative size of government expenditure on some of these items are as follow:—

TABLE XXVII

Some Selected Items of Government Expenditure

Year	Educational services		Health and social services	
	As % of GNP	Real value per capita ^{a/}	As % of GNP	Real value per capita ^{a/}
1960	2.45	47.93	1.21	23.72
1961	1.85	39.63	0.85	18.15
1962	2.39	54.21	1.19	27.03
1963	2.42	55.84	1.26	28.95
1964	2.59	65.33	1.70	42.88
1965	2.56	74.38	1.60	46.54
1966	2.43	88.50	1.66	60.50
1967	2.78	106.00	2.09	79.90
1968	2.83	112.39	2.46	57.81
Compound rate of growth		10%		11%

Source: *Thailand Statistical Yearbook*, various issues.

^{a/} Valued at 1962 constant prices.

The Government spending on education services and on health and social services appear to increase substantially, at the rates exceeding that of growth of per capita GNP indicating that the Government may be taking a more active role in providing low income people with real income transfer, in kind, to supplement their private earned income.

But to examine only these two measures can be misleading about the intention of the Government, one has to further examine the size of these items in relation to other items of the expenditure. The sub-categories of the two items can also be very informative.

TABLE XXVIII

Some Items of Government Expenditure as Percentage of Total Expenditure, 1964-1967

	(Per cent of total expenditure)			
	1964	1965	1966	1967
<i>Educational services</i>	17.6	17.4	16.9	15.2
Education administration	0.9	0.6	0.4	0.4
Primary education	9.8	9.6	9.0	7.8
Secondary education	2.2	2.0	1.9	1.9
University and technical education	3.2	3.5	3.8	4.0
Others	1.5	1.7	1.8	1.1
<i>Public health and social services</i>	11.6	10.9	11.5	11.9
Public health	3.5	3.3	3.1	2.8
Social welfare	5.2	4.4	4.3	4.6
Miscellaneous social services	2.9	3.2	4.1	4.5

Source: *Thailand Statistical Yearbook 1967-1969*, table 204, p. 405.

Let the education items be considered first. It is clearly shown that the Government is allotting a smaller proportion of its budget appropriation to education. Especially serious is the decline in spending on primary and secondary education and these are the levels of education that the low-income people can benefit most. As seen earlier the rate of drop-out between primary and secondary levels is more than 50 per cent. This percentage figure could be reduced if the Government would spend more on subsidizing secondary education to make education less costly for the poor. It is not impossible for the Government to provide free educational materials, medical services, even transportation to make it more attractive for parents to have their children in school longer. These fringe benefits from school will operate to offset the opportunity cost of leaving their children in school.

The Government appears to be spending more on universities also. Although this may help create more seats in the universities where the low-income children may hope to get, unless, however, the demand for higher education of the high-income people is already fully satisfied, most of the new seats will be taken by children from high-income families. The shift of emphasis of government spending from secondary education to university education would, therefore, tend to make social and economic inequalities more pronounced.

With respect to health and social services, a not so favourable picture also makes itself apparent. Expenditure on public health and social service is declining, percentage-wise. If one considers the fact that the public health service is the only source of modern medical services the low income people can get, the situation becomes a tragedy. The level of government spending on public health in Thailand is among the lowest in the world, even by the underdeveloped countries standard, as shown in Table XXIX.

With this relatively little money spent on public health services, there are still some doubt about the equality of opportunity to take advantage of the services offered. Hospitals and medical facilities tend to be concentrated in large metropolis, the rest is thinly spread over the entire kingdom. It seems, therefore, that the Government has not done its best in equalizing the level of living among its population.

TABLE XXIX

Government Expenditure on Health Services: Selected Countries, 1963-64

Country	Expenditure on health as % of general government expenditure	Expenditure per inhabitant (US. \$)
Indonesia	2.8	0.20
Nigeria	12.0	0.50
Thailand	3.4	0.60
Sudan	4.8	1.02
Guatemala	9.1	2.36
Senegal	6.6	3.47
Colombia	11.0	3.50
Jamaica	11.0	9.60
United States	4.7	47.40
United Kingdom	12.9	56.00

Source: J. Bryant M.D., *Health and the Developing World*, table 8, p. 43.

IV. CONCLUSIONS

(1) There is some evidence showing that the size distribution of income among urban families is becoming more equal. The lower-income brackets seem to have gained more than the middle-income brackets. The very high income families find their percentage share of income decreased somewhat.

(2) The mean income of rural families is less than half of the urban-family income and the differential is getting larger. The distribution is also more concentrated than that of urban income, the tendency is also toward a higher degree of inequality. This problem can become very serious during the years to come.

(3) With respect to the distribution of wealth, the distribution of land owned by urban population is more unequal than that of the rural population. Within the rural sector, the distribution of land ownership is more equal than the distribution of farm income.

With respect to the institutional factors influencing income distribution, a summary can be presented as follow:-

(1) The geographical mobility of workers appears to be quite high but the social and economic mobility is not as high. Individuals from different social and economic backgrounds do not have an equal opportunity for education from the secondary education upwards.

(2) The personal income tax, although proves itself to be fairly effective as a means of lessening the degree of income inequality, its structure could be further improved. Compared with other countries, the low income individuals in Thailand still bear a rather heavy tax burden while the high income individuals are relatively lightly taxed.

(3) The tax on land property is found to be highly regressive, its impact on the distribution of income is that of making it more unequal.

(4) The tax on exportation of rice has had an unfavourable effect on the distribution of income between rural and urban population. It causes an income transfer from rural to urban sector, making the urban-rural gap wider.

(5) The Government has not made enough use of the import duty as a means of redistribution of income. Revenue and protection remain the prime motives.

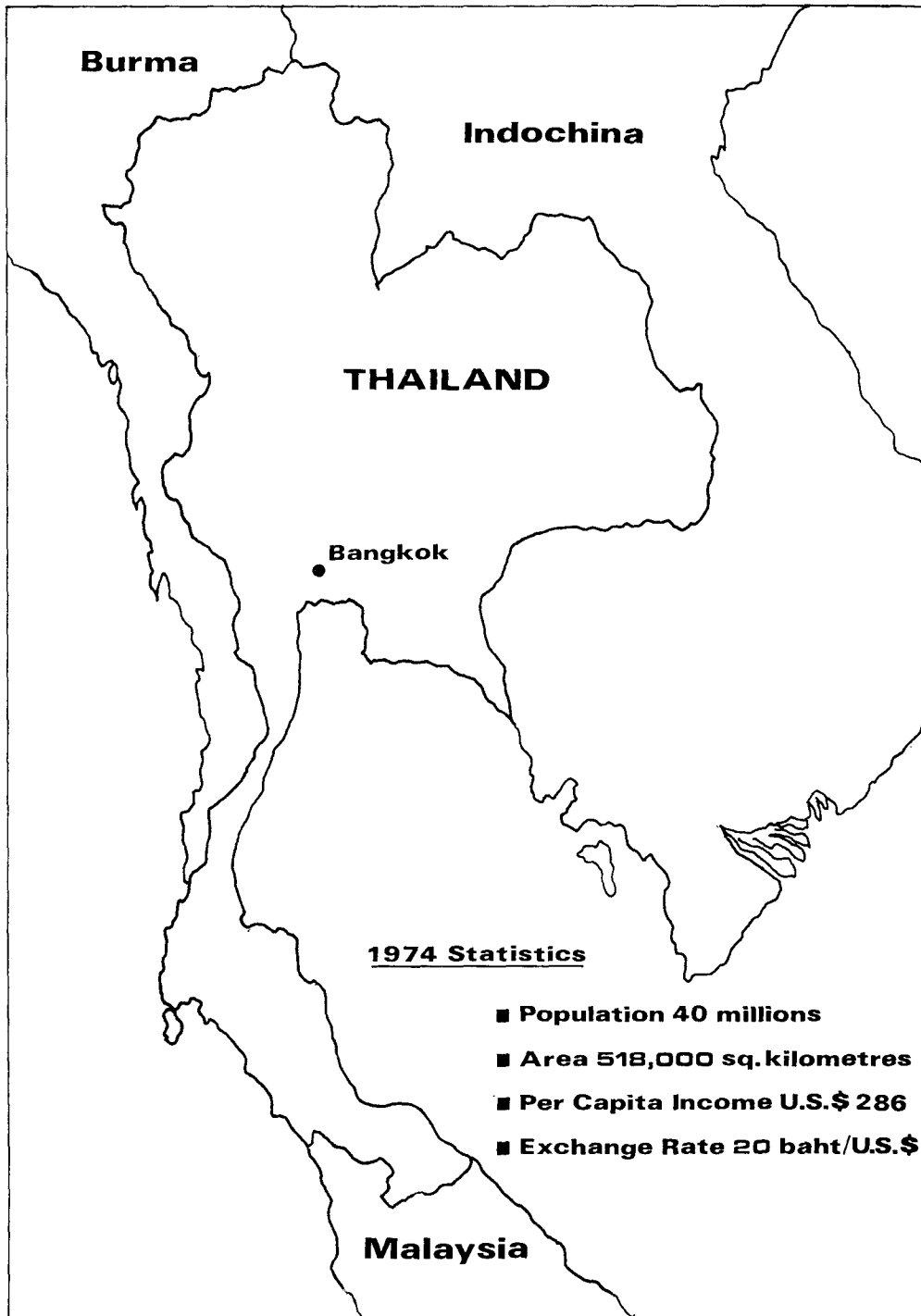
(6) Government expenditure on education, health and social services do not grow proportionately with other items of the expenditure. Their relative proportions actually decrease. This possibly implies that the attempt of the Government to transfer real income to the low income people via social services has not been adequately carried out.

SUBJECT INDEX*

- Absorption approach 128
- Agriculture 26
 capital constraint 33
 development 36-37, 141-157
- Balance of payments
 effects of economic planning on 232-234
 of Thailand 28-29
 self correction of 29-30
- Bank of Thailand
 evaluation of the policy making of 112
 improvement on policy of 87-90
 government security holding of 101
- Bankers' Association, Thai 87
- Board of Investment 38
- Bowring Treaty 32, 34
- Bretton Woods system 6
- Capital market 26
- Commercial banks 51, 61
 and government bonds 82, 96
 credit policy 93-95
 improvement 87-90, 95-96
 performance 80
 returns 82-86
- Comparative advantage of Thai rice farmers 32-33
- Credit and financial institutions 58-61
- Development policy 223-225
 regional 240-243
- Economic planning
 achievement of 229-234
 development of 223-225
- Educational system and graduate unemployment 47
- Environmental problems
 agriculture 43-44
 over-urbanization 43
 pollution 42-43
- Eurodollar market 13-16
- Excess capacity theory, its relevance to Thailand 113
- Exchange rates
 adjustment mechanisms 17-19
 and trade 8-9
 as export duties 144
 system 20
 uncertainties and its effects 8-9
- Exchange reserves 10-11
- Expenditure distribution of urban families 289-293
- Export expansion
 empirical results 264
 measurement of 260
- Exports, dependency of Thailand on 129
- External disturbances
 a theoretical model of 126
 empirical results 130-137
- Fertilizer
 demand for 193-194, 197-198
 policy implication 200-205
- Finance company 52, 61, 86
- Financial institutions 51-64
- Fiscal policy
 and income distribution 308-314
 and money supply 26-27
 and stability 29-32
- Growth models 238, 239
 limitations of 239
- Import substitution
 empirical results 261-264
 measurement of 258-261
- Income, size distribution of 285-286, 293-298
- Income distribution 45-46, 279-280
 and growth rate 280-281
 factors effecting 306-314
- Industrial development 38-39, 47, 268-275
 for import substitution 38
- Industrial estates 250-253

- Inflation
 and external effects 123-138
 and international monetary system 5-8
 in Thailand 123-125
- International Monetary Fund, the guide lines of 10
- International trade 25
- Investment 39
- Less-developed countries, special interests of 19-20
- Lorenz curve 283-284, 288, 292-293
- Macro-econometric model for Thailand 210-217
- Money supply, sources of changes of 26, 115-116
- National output, expansion of 229
- Non-tradable goods 126
- Northeast development, justifications for 236
- Over-urbanization 43
 costs of 247
- Prices, relations between international
 and domestic 133-136
- Real balance 39
- Regional planning, emergence of 235-236
- Regressive tax 46
- Rice 36-37, 141-205
 export measures 171
 export shares in world market 152-153
 factors effecting exports of 171-172
 Hong Kong market 180-181, 184
 Indonesian market 181-182, 185
 price control instruments 147
 price supporting programme 153-154
 reserve requirement 155-156
 Singapore market 180-181, 184
 special cheap price 169-170
 world trading system of 173
- Rice policy
 and income distribution 46
 evaluation 175-176
- Rice premium
 and export 175
 justification and criticism 149-151
- Rice taxation, objectives of 145-146
- Saving 39
 through financial institutions 55-57
 mobilization of 53-54
- Special Drawing Rights 12-13
- Stabilization, objectives of 27
- Theil's model of policy making process 99-101
- Tradable goods 126
- Trade, policy 32, 257, 276
- Unemployment 26, 47
- Unorganized money market 51
- Urban development 243
 limitations 244
 planning 248
 problems 249
- Wealth distribution
 and income distribution 281
 of rice farmers 303-306
 of rural families 298-300
 of urban families 288

MAP OF THAILAND



Burma

Indochina

THAILAND

Bangkok

1974 Statistics

- **Population 40 millions**
- **Area 518,000 sq. kilometres**
- **Per Capita Income U.S.\$ 286**
- **Exchange Rate 20 baht/U.S.\$**

Malaysia