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A Functional-Economic Analysis of

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A FUNCTIONAL-ECONOMIC ANALYSIS OF
CENTRAL GOVERNMENT EXPENDITURES OF THAILAND,
1965-66 TO 1975-76

By Mukul Asher & Amina Tyabji

Over the past century, but especially in the last fifty years, the public sector, which includes the general government sector and financial and non-financial public enterprises,[1] has come to play an increasingly active role in the economic affairs of countries. This has been the case even in Thailand where the financial policies of the government, especially before 1950, have been quite conservative.[2] The main functions of the general government sector are to produce non-market services primarily for collective consumption, to transfer income to other sectors for purposes of public policy, to maintain high levels of employment and price stability, to promote economic growth, and to ensure an equitable distribution of the fruits of growth between regions and income classes. Since one of the major instruments through which the government sector attempts to realize its objectives is the budget, the size, structure, and growth of various budgetary components is a matter of some importance.

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[1]   For a detailed discussion of differences between the public sector and the general government sector, see: A Manual for Economic and Functional Classification of Government Transactions (New York: United Nations, 1958), pp. 20-28.

[2]   James C. Ingram, Economic Change in Thailand 1850-1970 (Stanford, California: Stanford University Press, 1971), p. 299.

Currently, the public sector in Thailand consists of the central government, local governments (including municipalities), a number of state enterprises, and decentralized agencies.[3/] The public finance system in Thailand is highly centralized, with the central government accounting for more than 90 percent of total government sector operations.[4/] The influence of the central government on the size and composition of overall public expenditures is likely to be even greater than indicated by the 90 percent share, as it can influence resource allocation in local governments and state enterprises through non-budgetary policies as well.

Given the complexity and multiplicity of uses and objectives of budgetary transactions, no single system of collecting and analysing information regarding these transactions is likely to be satisfactory. Therefore, as far as financial transactions are concerned, most governments maintain three separate but closely interrelated budgetary data systems.[5/]

The first system, which in most countries (including Thailand) is the primary system, is designed for the purpose of control and accountability. Since under this system expenditures are classified

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[3/] The decentralized agencies are organizations established for delivering specific public services according to the policies of the central government. These agencies are usually attached to one of the departments of the central government and can raise revenues independently and spend funds at their discretion. Their relative importance is, however, small.

[4/] H.V. Richter and C.T. Edwards, "Recent Economic Developments in Thailand", in Studies of Contemporary Thailand, eds. Robert Ho and E.C. Chapman (Canberra: Australian National University Press, 1973), p. 51.

[5/] For a discussion of interrelationships between the three systems, see: A Manual on Government Finance Statistics (Washington, D.C.: International Monetary Fund, 1974).

by spending units, and within each unit by subject of expenditure,
for example, wages, travel grants, etc., the system does not provide
information for purposes other than budgetary control and accountability
unless further reclassification is undertaken.

The second system is designed to make the data for the
government sector consistent with the other sectors for constructing
national income accounts.

The purpose of the third system is to facilitate government
priority planning and analysis of the short-run impact of the govern-
ment budget on economic activity. Under this system, various govern-
ment tranactions are classified according to the purpose (i.e. function)
for which they are made irrespective of the spending unit which makes
them: and according to various economic categories, for example, ex-
penditures on final goods and services, on transfers, etc.[6/] The aggre-
gate demand and price level impact is likely to be different not only
between expenditures on final goods and services and transfers but also
among various components of each of these categories.

The main objective of this paper is to analyse the size,
structure, and growth of budgetary expenditures of the central govern-
ment of Thailand. For this purpose, a functional-economic classification

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[6/] A detailed methodology and analysis of this system is provided
in the U.N. and the I.M.F. manuals cited in footnotes 1 and 5
respectively.

of the budget is used.[7] The time period covered is from 1965-66 to
1975-76,[8] a choice governed by availability of relevant data as
explained below.

From published sources, the functional-economic classifi-
cation of the central government expenditures is available only on a
sporadic basis. However, the above classification is regularly com-
piled by the Economic Research Department of the Bank of Thailand from
data supplied by the Comptroller General of Thailand. It is this com-
pilation, made available to us for the years 1965-66 to 1975-76, which
is used in this study.

It may be noted that government expenditures in this study
are recorded on an actual disbursement basis and therefore differ from
the appropriated amounts. Generally, in Thailand, the amounts appro-
priated in a given fiscal year are not fully spent in that fiscal year
but are carried over to the next fiscal year. The extent of this carry
over increased rapidly between 1965-66 to 1971-72 (from about one-tenth
to about one-fourth of total expenditures) but has tended to decline
somewhat in recent years, hovering around one-sixth of total expenditures.

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[7] Thus, the focus of this paper is on financial inputs rather than
on the relationship between inputs and outputs emphasized in the
Planning-Programming-Budgetting-System (PPBS). No systematic
use of PPBS seems to have been made in Thailand.

[8] The Thai Fiscal year is from October 1 to September 30.

AN ANALYSIS OF BUDGETARY EXPENDITURES

In this section, we present first, a breakdown of total expen-
ditures into current and capital components. Then,a functional and an
economic classification of each of these components is discussed. Finally,
a cross classification of selected categories of government expenditures
for a limited number of years is presented. This provides information
on the means by which government seeks to perform various functions, i.e.
through direct government production, government purchases of goods and
services from the private sector, transfers and loans, or capital
investment.

For each category of expenditures, income elasticity, average
annual rate of growth, and marginal propensity are estimated.[9/] While
income elasticity may be defined as the ratio of a percentage change
in government expenditures to a percentage change in national income,
marginal propensity may be defined as the ratio of a change in government

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[9/] The estimating equations, using data for 1965-66 to 1975-76 are:
for income elasticity

Log G = a + b log GDP

for average annual rate of growth

Log G = a + bt

The coefficient 'b' is then multiplied by 2.30259 to obtain the
average annual rate of growth.

for marginal propensity

G = a + b GDP

where: G   =   government expenditure
        GDP =   gross domestic product
        t   =   time period
        a and b are constants.

expenditures to a change in national income. Thus, the latter indicates an increase in government expenditures as a percentage of the increase in national income.

Current, Capital and Total Expenditures

The breakdown of total expenditure into current and capital expenditures is intended to roughly approximate the distinction between consumption and investment. However, it should be noted that "it is often difficult to determine what is a capital investment as opposed to a current operating expense. The principle that if something produces long run returns, it is a capital expenditure is not always easily applied".[10] Moreover, the recognition that many current expenditures, for example, on education and health, make important contributions to the process of economic development, has reduced somewhat the usefulness of this distinction. To quote, "there has been an increasing challenge in recent years ... to any conclusion that a higher priority should attach to expenditures on tangible assets as a means of promoting development than to outlays for such intangibles as health, security and education".[11] In spite of the above limitations and occasionally arbitary

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[10] R.D. Lee, Jr. and R.W. Johnson, Public Budgetting Systems (Baltimore: University Park Press, 1973), p. 254.

[11] J. Levin, "On Measuring Government", Finance and Development (9 September 1972): 19.

manner of assigning expenditures to each category,[12]/ the current-capital

classification does retain its usefulness, especially as an indicator

of trends regarding government con:.mption and invest.ent.

In Table 1, the current, capital and total expenditures of the

central government of Thailand are presented. As shown in this table,

total expenditures as a proportion of GDP[13]/ have fluctuated between a

low of 16.0 percent in 1973-74 to a high of 19.9 percent in 1971-72.

The proprotion increased steadily from 16.1 percent in 1965-66 to 19.9

percent in 1971-72, declined over the next three years, and then increased

in 1975-76 to 18.4 percent. The current expenditures to GDP and capital

expenditures to GDP ratios have behaved in a similar fashion except that

in the latter case, the decline began a year earlier, that is, in 1970-71.

In comparison with other ASEAN (Association of Southeast Asian

Nations) countries, Thailand's total expenditures to GDP ratio is on

the low side. For the period 1966 to 1975, the corresponding ratio varied

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12/ Thus, in 1974-75 and 1975-76 each village in Thailand was given
a certain sum for projects initiated by the villages themselves.
In the absence of any information on these projects, the Bank of
Thailand arbitarily allocated half the expenditures to the current
and the other half to the capital category.

13/ While this ratio is widely used as an overall indicator of the
size of the general government sector, conceptually it is not en-
tirely satisfactory as the numerator of this ratio includes trans-
fer payments, while the denominator excludes them. Further the
basis of valuation of government expenditures and GDP are differ-
ent. In the case of the former, the basis of valuation is cost
of services; in the case of GDP it is a combination of market
values and cost.

Table 1

CURRENT, CAPITAL AND TOTAL ACTUAL EXPENDITURES OF THE CENTRAL GOVERNMENT

OF THAILAND[a], 1965-66 TO 1975-76

(In Millions' of Current Bahts)

Fiscal Year[b]	Current Expenditures		Capital Expenditures		Total Expenditures		Current Expenditures / GDP	Capital Expenditures / GDP	Total Expenditures / GDP
1965-66	9,678.9	**(71.4)**	3,879.2	(28.6)	13,558.1	(100.0)[c]	11.5	4.6	16.1
1966-67	11,906.8	(70.5)	4,973.5	(29.5)	16,880.3	(100.0)	11.8	4.9	16.7
1967-68	13,392.5	(68.0)	6,290.0	(32.0)	19,682.5	(100.0)	12.4	5.8	18.2
1968-69	14,826.8	(68.6)	6,789.9	(31.4)	21,616.7	(100.0)	12.6	5.8	18.4
1969-70	16,483.7	(69.4)	7,260.8	(30.6)	23,744.	(100.0)	12.8	5.6	18.5
1970-71	18,285.4	(67.9)	8,650.0	(32.1)	26,935.4	(100.0)	13.4	6.4	19.8
1971-72	20,762.0	(72.0)	8,071.1	(28.0)	28,833.1	(100.0)	14.4	5.6	19.9
1972-73	23,175.5	(75.9)	7,344.0	(24.1)	30,519.4	(100.0)	14.1	4.5	18.5
1973-74	27,686.5	(79.8)	7,010.9	(20.2)	34,697.4	(100.0)	12.8	3.2	16.0
1974-75	34,140.7	(78.4)	9,386.3	(21.6)	43,527.0	(100.0)	12.7	3.5	16.2
1975-76	39,862.4	(74.3)	13,822.8	(25.7)	53,685.3	(100.0)	13.7	4.7	18.4

Source: For Budgetary Data: Department of Economic Research, Bank of Thailand. Unpublished data obtained during a research trip to Bangkok.

For GDP   : Bank of Thailand, Monthly Bulletin, various issues.

Note: a) Expenditure figures are on a gross basis. Actual expenditures differ from appropriations as some of the appropriations in a given fiscal year may not actually be spent till subsequent fiscal years.

b) The Thai fiscal year is from October to September.

c) Figures in brackets are percentages of the total expenditures. Details may not add up to the total due to rounding.

from 23.1 to 34.4 for Malaysia, from 20.0 to 28.7 for Singapore, and
from 10.1 to 18.5 for Philippines. For Indonesia, during 1969-70 to
1975-76, it varied from 12.3 to 22.4.[14] Moreover, in the case of the
Philippines and Indonesia, the relevant ratio has been increasing fairly
rapidly since the 1970's. This is clearly not the case with Thailand.

During this period, current expenditures accounted for a low
of 67.9 percent in 1970-71 to a high of 79.8 percent in 1973-74 of
total expenditures. This proportion is larger than the corresponding
proportions for other ASEAN countries. Moreover, in Thailand, the pro-
portion devoted to current expenditures has tended to be larger since
1971 than for the period preceding it. Correspondingly, the proportion
devoted to capital expenditures has tended to be smaller in the post
1971 period. Thus, 1971-72 to 1973-74 stands out as a period when not
only the total expenditures to GDP ratio declined but also the absolute
level as well as the share of the capital component in total expendi-
tures declined.

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[14] It should be noted that because of classification and conceptual
differences, the total expenditure to GDP ratios of ASEAN coun-
tries are only roughly comparable. The data for Malaysia is
from Mukul Asher and Amina Tyabji, "Patterns of Budgetary Expen-
ditures of the Federal Government of Malaysia", UMBC Economic
Review, 13 (No. 1, 1977) p. 57; for Philippines from Mukul Asher
and Amina Tyabji, "An Analysis of Budgetary Expenditures of the
National Government of the Philippines", Ekonomi dan Keuangan in
Indonesia, March 1978 (forthcoming), for Singapore, Indonesia
from unpublished papers by the same authors. Hence forth, unless
otherwise indicated, comparative material for other ASEAN coun-
tries is derived from these sources.

The decline in capital expenditures in 1971-72 and 1972-73
may be largely explained by the government's use of these expenditures
for short-run macro stabilization purposes. In the case of Thailand,
due to the unwillingness to vary tax rates, "it would not be an exagge-
ration to say that throughout most of the post-war period, this (govern-
ment expenditures) is the only short-run macro-economic policy instru-
ment employed by the government".[15/] The need for a restrictive bud-
getary policy arose because the cash budget deficits of the central
government were getting larger and larger since the mid-sixties. Thus,
for fiscal years 1966 through 1968, the average deficit was 1700
million bahts, it rose to an average of 3700 million bahts in FYS 1969
and 1970; increased to 6310 million bahts in 1970-71, and to 7022
million bahts in 1971-72.[16/] These deficits were due to a combination
of declining productivity of the revenue structure,[17/] and a relatively
high rate of increase in government expenditures, especially current
expenditure. This inability or unwillingness to reduce current expen-
diture meant that the burden of restrictive policy would fall on capital

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[15/] Ammar Siamwalla, "Stability, Growth and Distribution in The Thai
Economy", in Finance, Trade and Economic Development in Thailand,
ed. Puey Ungphakorn (Bangkok: Sompong Press, 1975), p. 29 - em-
phasis in the original, italics supplied.

[16/] Deficit figures are from the relevant issues of the Bank of Thailand,
Annual Economic Report (Bangkok).

[17/] Thus the central government revenues to GDP ratio declined from
14.4 in 1968 to 12.4 in 1973. Calculated from the Bank of Thailand,
Monthly Review (Bangkok), various issues.

Table 5 (Continued)

Fiscal Year[b]	Agriculture & Mineral Resources	Transport storage & Communications	Other Capital Expenditure	Total Capital Expenditures
1965-66	667,6 (17.5)	1,438.8 (37.1)	2.2 (0.0)	3,879.2 (100.0)[c]
1966-67	1,022.6 (20.6)	1,998.6 (40.2)	0.1 (0.0)	4,973.5 (100.0)
1967-68	1,258.1 (20.0)	2,454.5 (39.0)	0.3 (0.0)	6,290.0 (100.0)
1968-69	1,215.1 (17.9)	2,759.9 (40.6)	0.0 (0.0)	6,789.9 (100.0)
1969-70	1,518.0 (20.9)	2,634.7 (36.3)	0.0 (0.0)	7,260.8 (100.0)
1970-71	1,779.7 (20.6)	2,756.7 (31.9)	0.3 (0.0)	8,650.0 (100.0)
1971-72	1,437.6 (17.8)	3,060.1 (37.9)	0.1 (0.0)	8,071.1 (100.0)
1972-73	1,257.0 (17.1)	2,649.7 (36.1)	0.0 (0.0)	7,344.0 (100.0)
1973-74	1,201.8 (17.1)	2,358.1 (33.6)	0.4 (0.0)	7,010.9 (100.0)
1974-75	1,387.8 (14.8)	2,930.8 (31.2)	326.9 (3.5)	9,386.3 (100.0)
1975-76	2,540.9 (18.4)	3,877.9 (28.1)	155.5 (1.1)	13,822.8 (100.0)

Source: Same as for Table 1.

a, b. See footnotes to Table 1.

c. Figures in brackets are percentages of total capital expenditures. Details may not add up to the total due to rounding.

following may be noted.

Expenditure on economic services accounts for by far the largest proportion of capital expenditures with its share ranging from a low of 53.9 in 1973-74 to a high of 70.3 percent in 1966-67. Its share, however, tended to be lower in 1970's when compared with the 1960's. Within economic services, the transport, storage, and communications category is the most important. Its share in total capital expenditures, however, was generally higher before 1970 but has tended to decline somewhat since then. The share of agriculture and mineral resources has also been lower in the 1970's when compared to 1960's. Unlike the previous category, however, its end of the period share is slightly higher than at the beginning of the period. Capital expenditures on "other economic services" mainly consisting of manufacturing and construction, fuel and power, and other miscellaneous items, have been increasing in relative importance during this period.

Expenditure on social services, which has fluctuated between a low of 17.2 percent to a high of 32.6 percent, accounts for the second largest proportion of capital expenditures. Moreover, its share has generally been increasing during this period. The share of education in total capital expenditures more than doubled during this period. Relative expenditures on health, after stagnating for many years, showed a large increase in 1975-76.

The share of general services fell from 15.3 percent in 1965-66 to 8.0 percent in 1975-76. A similar decline was noted in the share of

this category for current expenditures as well.

When the data contained in Table 5 are recast in terms of income elasticity, marginal propensity and average annual rates of growth (see Table 8), only two categories, social services (1.02), and education (1.28) are observed to have income elasticities of greater than one. All other categories, including total capital expenditures, have income elasticities substantially below one. The largest marginal propensity is exhibited by economic services (0.016), followed by social services (0.012), and education (0.010). Expenditures on social services (13.2), education (16.0), and health (11.3) exhibit higher average annual rates of growth than capital expenditures as a whole (8.6). Significantly, neither expenditures on economic services nor any of its components exhibit above average annual rates of growth, thus indicating below average increases in investments on these categories.

A Functional Classification of Total Expenditures

The broad trends indicated by the functional classification of total expenditures presented in Tables 6 and 7 are similar to these observed for current and capital expenditures. Thus, the relative importance of general services declined during this period, while the share allocated to defence showed a general tendency to increase between 1965-66 and 1973-74, but has declined moderately since then. However, the takeover of the government by the National Administrative Reform Council (NARC) in October 1976 may once again result in increased relative importance of defence, as the top priority of the new administration is

Table 6

A FUNCTIONAL CLASSIFICATION OF ACTUAL TOTAL EXPENDITURES OF THE CENTRAL
GOVERNMENT OF THAILAND,[a] 1965-66 TO 1975-76

(In Millions of Current Bahts)

Fiscal Year[b]	General Services	Defence	Social Services	Economic Services	General Debt Services[c]	Unallocable	Total Expenditures
1965-66	2,520.3(18.6)	2,055.2(15.2)	3,801.8(28.0)	3,677.6(27.1)	638.9(4.7)	864.3(6.4)	13,558.1(100.0)
1966-67	2,744.7(16.3)	2,437.1(14.4)	4,373.5(25.9)	5,082.5(30.1)	889.1(5.3)	1,353.4(8.0)	16,880.3(100.0)
1967-68	3,083.1(15.7)	2,989.5(15.2)	**5,037.1(25.6)**	**5,993.9(30.5)**	978.9(5.0)	1,599.9(8.1)	19,682.5(100.0)
1968-69	3,229.7(14.9)	3,638.4(16.8)	5,640.0(26.1)	6,401.3(29.6)	1,184.1(5.5)	1,523.2(7.0)	21,616.7(100.0)
1969-70	3,412.6(14.4)	4,159.5(17.5)	6,261.6(26.4)	6,950.4(29.3)	1,417.0(6.0)	1,543.3(6.5)	23,744.5(100.0)
1970-71	3,831.2(14.2)	5,202.4(19.3)	7,200.7(26.7)	7,390.5(27.4)	1,898.8(7.0)	1,411.9(5.2)	26,935.4(100.0)
1971-72	4,167.8(14.5)	5,666.9(19.7)	8,175.0(28.4)	7,190.1(24.9)	2,400.2(8.3)	1,233.1(4.3)	28,833.1(100.0)
1972-73	4,221.2(13.8)	5,949.6(19.5)	8,443.4(27.7)	6,704.4(22.0)	2,910.8(9.5)	2,290.0(7.5)	30,519.4(100.0)
1973-74	5,216.2(15.0)	7,103.6(20.5)	10,499.7(30.0)	6,555.5(18.9)	3,388.8(9.8)	1,933.7(5.6)	34,697.4(100.0)
1974-75	6,506.2(14.9)	7,869.9(18.1)	12,240.2(28.1)	10,807.6(24.8)	3,789.1(8.7)	2,316.0(5.3)	43,527.0(100.0)
1975-76	7,313.9(13.6)	9,746.3(18.2)	16,353.0(30.5)	14,321.8(26.7)	3,830.2(7.1)	2,120.0(3.9)	53,685.3(100.0)

Source: Same as for Table 1

Note: (a), (b) - See footnotes to Table 1

(c) - Excludes debt repayments

(d) - Figures in brackets are percentages of total expenditures.
Details may not add up to totals due to rounding.

Table 7

ACTUAL TOTAL EXPENDITURES[a] ON SOCIAL AND ECONOMIC SERVICES, BY CATEGORY,

BY THE CENTRAL GOVERNMENT OF THAILAND, 1965-66 TO 1975-76

(In Millions of Current Bahts)

	SOCIAL SERVICES				
Fiscal Year[b]	Total Social Services	Education	Health	Social Services and Welfare	Other Social Services
1965-66	3,801.8 (100.0)[c]	2,256.5 (59.4)	504.4 (13.3)	554.2 (14.6)	486.6 (12.8)
1966-67	4,373.5 (100.0)	2,522.9 (57.7)	584.5 (13.4)	582.7 (13.3)	683.4 (15.6)
1967-68	5,037.1 (100.0)	3,293.6 (65.4)	538.5 (10.7)	623.0 (12.4)	582.1 (11.6)
1968-69	5,640.0 (100.0)	3,713.7 (65.8)	606.3 (10.8)	687.1 (12.2)	632.9 (11.2)
1969-70	6,261.6 (100.0)	3,898.6 (62.3)	593.0 (9.5)	1,018.1 (16.3)	752.0 (12.0)
1970-71	7,200.7 (100.0)	4,884.1 (67.8)	803.2 (11.2)	759.1 (10.5)	754.3 (10.5)
1971-72	8,175.0 (100.0)	5,552.9 (67.9)	918.7 (11.2)	954.0 (11.7)	749.3 (9.2)
1972-73	8,443.4 (100.0)	5,918.0 (70.1)	935.9 (11.1)	952.4 (11.3)	637.1 (7.5)
1973-74	10,499.7 (100.0)	7,667.7 (73.0)	1,203.3 (11.5)	1,188.1 (11.3)	440.5 (4.2)
1974-75	12,240.2 (100.0)	8,833.6 (72.2)	1,367.5 (11.2)	1,411.7 (11.5)	627.5 (5.1)
1975-76	16,353.0 (100.0)	11,999.4 (73.4)	2,145.7 (13.1)	1,619.7 (9.9)	588.3 (3.6)

Table 7 (Continued)

Fiscal Year[b]	Total Economic Services	Agriculture & Mineral Resources	Transport, Storage & Communications	Other Economic Services[d]
	ECONOMIC SERVICES			
1965-66	3,677.6 (100.0)[c]	1,292.8 (35.2)	1,843.9 (50.1)	540.9 (14.7)
1966-67	5,082.5 (100.0)	1,720.7 (33.9)	2,527.4 (49.7)	834.4 (16.4)
1967-68	5,993.9 (100.0)	2,114.8 (35.3)	3,058.2 (51.0)	820.9 (13.7)
1968-69	6,401.3 (100.0)	2,145.1 (33.5)	3,457.5 (54.0)	798.7 (12.5)
1969-70	6,950.4 (100.0)	2,604.1 (37.5)	3,347.3 (48.2)	999.0 (14.4)
1970-71	7,390.5 (100.0)	2,916.4 (39.5)	3,529.2 (47.2)	944.9 (12.8)
1971-72	7,190.1 (100.0)	2,560.9 (35.6)	3,856.2 (53.6)	773.0 (10.8)
1972-73	6,704.4 (100.0)	2,482.4 (37.0)	3,577.6 (53.4)	644.4 (9.6)
1973-74	6,555.5 (100.0)	2,721.8 (41.5)	3,420.9 (52.2)	412.8 (6.3)
1974-75	10,807.6 (100.0)	3,238.1 (30.0)	4,244.4 (39.3)	3,325.1 (30.8)
1975-76	14,321.8 (100.0)	4,824.4 (33.7)	5,622.2 (39.3)	3,875.2 (27.1)

Source: Same as for Table 1

Note: (a), (b) - See footnotes to Table 1

(c)   - Details may not add up to totals due to rounding.

(d)   - This category includes expenditures on fuel & power, other mineral resources manufacturing, construction and other miscellaneous items.

proclaimed to be national security. The behaviour of total expenditures on social services and its component parts, and of economic services and its component parts, is also similar to the one observed for current and capital expenditures.

The share of total expenditures allocated to economic services is found to be larger than that for social services for the period 1965-66 to 1970-71, but smaller for the post 1971 period. The range of fluctuations in the share of economic services (a range of 11.6 percentage points) in total expenditures is also much greater than for social services (4.6 percentage points).

As indicated in Table 8, income elasticity of total government expenditures in Thailand is near unitary for this period. The only categroies which exhibit higher than unitary elasticity are general debt services (1.49), education (1.27), defence (1.18), social services (1.10), and health (1.09). The same categories also exhibit higher average annual rates of growth than total expenditure as a whole. It is notesorthy that neither expenditures on total economic services nor any of its components are found among the above categories. Marginal propensity is found to be highest for social services (0.053), followed by education (0.042), economic services (0.037), and defence (0.034).

The summarize the discussion on the functional classification of expenditures of the central government of Thailand, during the period under consideration, education and defence expenditures have received a high priority, while expenditures on economic services have received a much lower priority, especially in the post 1971 period.

Table 8

ESTIMATES OF INCOME ELASTICITY, MARGINAL PROPENSITY, AND AVERAGE ANNUAL
RATES OF GROWTH OF ACTUAL CURRENT, CAPITAL AND TOTAL EXPENDITURES OF
THE CENTRAL GOVERNMENT OF THAILAND, BY FUNCTION.[a]

(In Millions of Current Bahts)

| Category[b] | INCOME ELASTICITY | | |
	Coefficient	(Constant Term)	(R^2)
CURRENT EXPENDITURE	1.09	(-1.37)	(0.98)
General Services	0.93	(-1.29)	(0.99)
Defence	1.18	(-2.44)	(0.91)
Social Services	1.12	(-2.05)	(0.99)
Education	1.28	(-3.04)	(0.98)
Health	1.12	(-2.98)	(0.96)
Social Services & Welfare	0.90	(-1.71)	(0.92)
Economic Services	1.15	(-2.60)	(0.94)
Agriculture and Non Mineral Resources	0.96	(-1.93)	(0.97)
Transport, Storage, and Communications	1.01	(-2.31)	(0.96)
General Debt Service	1.49	(-4.47)	(0.90)
CAPITAL EXPENDITURE	0.69	(0.28)	(0.71)
General Services	0.48	(0.40)	(0.84)
Social Services	1.02	(-2.01)	(0.74)
Education	1.27	(-3.48)	(0.78)
Health	0.90	(-2.48)	(0.57)
Economic Services	0.57	(0.70)	(0.54)
Agriculture and Mineral Resources	0.55	(.26)	(0.46)
Transport, Storage and Communications	0.46	(1.05)	(0.52)
TOTAL EXPENDITURES	0.99	(-0.69)	(0.96)
General Services	0.85	(-0.78)	(0.99)
Defence Expenditure	1.18	(-2.44)	(0.91)
Social Services	1.10	(-1.80)	(0.97)
Education	1.27	(-2.91)	(0.96)
Health	1.09	(-2.74)	(0.93)
Social Services and Welfare	0.86	(-1.51)	(0.92)
Economic Services	0.78	(-0.21)	(0.79)
Agriculture and Mineral Resources	0.75	(-0.50)	(0.79)
Transport, Storage and Communications	0.60	(0.44)	(0.72)
General Debt Services	1.49	(-4.47)	(0.90)

Table 8 (Continued)

Category[b]	MARGINAL PROPENSITY		(R^2)
	Coefficient	(Constant Term)	
CURRENT EXPENDITURE	0.137	(-1011.7)	(0.99)
General Services	0.020	(239.0)	(0.99)
Defence	0.034	(-208.6)	(0.93)
Social Services	0.042	(-702.7)	(0.98)
Education	0.032	(-102.2)	(0.98)
Health	0.006	(-133.2)	(0.96)
Social Services & Welfare	0.005	(123.6)	(0.93)
Economic Services	0.021	(-770.9)	(0.92)
Agriculture and Non Mineral Resources	0.007	(71.3)	(0.97)
Transport, Storage, and Communications	0.005	(2.3)	(0.95)
General Debt Service	0.016	(-516.8)	(0.90)
CAPITAL EXPENDITURE	0.031	(2586.8)	(0.70)
General Services	0.002	(405.7)	(0.82)
Social Services	0.012	(142.4)	(0.69)
Education	0.010	(-222.8)	(0.74)
Health	0.001	(-21.5)	(0.52)
Economic Services	0.016	(2181.2)	(0.57)
Agriculture and Mineral Resources	0.004	(669.1)	(0.43)
Transport, Storage and Communications	0.006	(1616.7)	(0.51)
TOTAL EXPENDITURES	0.168	(1575.0)	(0.96)
General Services	0.022	(644.7)	(0.99)
Defence Expenditure	0.034	(-208.8)	(0.93)
Social Services	0.053	(-560.3)	(0.96)
Edcuation	0.042	(-1244.8)	(0.96)
Health	0.007	(-154.6)	(0.90)
Social Services and Welfare	0.005	(158.5)	(0.93)
Economic Services	0.037	(1410.3)	(0.80)
Agriculture and Mineral Resources	0.012	(740.4)	(0.77)
Transport, Storage and Communications	0.012	(1619.0)	(0.72)
General Debt Services	0.016	(-516.8)	(0.90)

Table 8 (Continued)

| Category[b] | AVERAGE ANNUAL RATES OF GROWTH | | | |
	(Coefficient)	Coefficient x 2.30259	(Constant Term)	(R^2)
CURRENT EXPENDITURE	0.058	13.3[c]	(3.94)	(0.99)
General Services	0.048	11.0	(3.22)	(0.95)
Defence	0.065	14.9	(3.28)	(0.99)
Social Services	0.058	13.4	(3.39)	(0.96)
Education	0.067	15.5	(3.16)	(0.98)
Health	0.058	13.3	(2.48)	(0.91)
Social Services and Welfare	0.047	10.8	(2.65)	(0.91)
Economic Services	0.057	13.2	(3.02)	(0.84)
Agriculture and Non Mineral Resources	0.050	11.6	(2.75)	(0.96)
Transport, Storage, and Communications	0.053	12.1	(2.59)	(0.95)
General Debt Service	0.082	18.9	(2.76)	(0.98)
CAPITAL EXPENDITURE	0.037	8.6	(3.63)	(0.75)
General Services	0.025	5.8	(2.72)	(0.86)
Social Services	0.057	13.2	(2.91)	(0.84)
Education	0.070	16.0	(2.65)	(0.85)
Health	0.049	11.3	(1.89)	(0.60)
Economic Services	0.031	7.0	(3.48)	(0.55)
Agriculture and Mineral Resources	0.030	7.0	(2.94)	(0.50)
Transport, Storage and Communications	0.025	5.9	(3.26)	(0.59)
TOTAL EXPENDITURES	0.052	12.0	(4.11)	(0.97)
General Services	0.044	10.1	(3.34)	(0.95)
Defence Expenditure	0.065	14.9	(3.28)	(0.99)
Social Services	0.058	13.4	(3.51)	(0.98)
Education	0.068	15.6	(3.28)	(0.98)
Health	0.057	13.1	(2.58)	(0.90)
Social Services and Welfare	0.045	10.4	(2.68)	(0.91)
Economic Services	0.040	9.3	(3.60)	(0.75)
Agriculture and Mineral Resources	0.040	9.2	(3.15)	(0.81)
Transport, Storage and Communications	0.032	7.4	(3.33)	(0.77)
General Debt Services	0.082	18.9	(2.76)	(0.98)

a. For the form of the estimating equations, see footnote 9. The period covered is from 1965-66 to 1975-76.

b. Details may not add up to the total as some minor items are omitted.

c. Based on coefficient carried to seven decimal points.

Durban-Watson (D-W) Statistic is not reported as at least fifteen observations are necessary to apply the D-W test meaningfully.

An Economic Classification of Current Expenditures

On the basis of an economic classification of current expenditures of the central government of Thailand presented in Table 9 the following may be noted.

During the period, the share of total current expenditures allocated to expenditures on goods and services has remained roughly the same, at about 80.0 percent. This proportion is much larger than the corresponding proportion for Singapore, but roughly the same compared to the Philippines.[24] While a breakdown of expenditures on goods and services into wages and salaries, rental of fixed assets, and other goods and services from domestic and foreign sectors is not available for Thailand, such a high proportion of current expenditures devoted to this category indicates an overwhelming preference on the part of the central government to perform its tasks directly rather than via transfers to other levels of government and to other sectors of the economy.

Expenditures on total current transfers, after declining in relative importance between 1965-1966 and 1973-74, showed an increase in the subsequent two years due to large transfers to local governments

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[24] In Singapore, expenditures on goods and services have accounted for a low of 56.0 percent in 1973-74 to a high of 63.8 percent in 1969-70 of total current expenditures. The corresponding proportions for the Philippines are 77.9 in 1973-74 and 86.4 in 1966-67. Since 1969-70, the Philippine proportion has been around 79.0 percent. The relevant data for Malaysia and Indonesia are not available.

Table 9

AN ECONOMIC CLASSIFICATION OF ACTUAL CURRENT EXPENDITURES OF THE
CENTRAL GOVERNMENT OF THAILAND[a], 1965-66 TO 1975-76

(In Millions of Current Baths)

Fiscal Year[b]	Expenditure on Goods & Services	Interest Payments	Total Current Transfers	Transfers to Households
1965-66	7,816.7 (80.8)	637.8 (6.6)	935.0 (9.7)	600.0 (6.2)
1966-67	9,303.9 (78.1)	874.7 (7.3)	1,064.2 (8.9)	665.3 (5.6)
1967-68	11,149.9 (83.3)	961.6 (7.2)	985.7 (7.4)	629.8 (4.7)
1968-69	12,302.1 (83.0)	1,167.3 (7.9)	1,063.1 (7.2)	722.6 (4.9)
1969-70	13,481.8 (81.8)	1,361.7 (8.3)	1,469.0 (8.9)	1,063.4 (6.5)
1970-71	14,872.0 (81.3)	1,868.4 (10.2)	1,441.4 (7.9)	797.8 (4.4)
1971-72	16,662.2 (80.3)	2,364.3 (11.4)	1,560.8 (7.5)	991.3 (4.8)
1972-73	18,762.8 (81.0)	2,813.1 (12.1)	1,522.9 (6.6)	968.6 (4.2)
1973-74	22,538.5 (81.4)	3,297.0 (11.9)	1,746.4 (6.3)	1,270.7 (4.6)
1974-75	27,196.5 (79.7)	3,418.0 (10.0)	3,308.9 (9.7)	1,574.8 (4.6)
1975-76	31,819.8 (79.8)	3,561.8 (8.9)	4,103.0 (10.3)	1,896.4 (4.8)

Table 9   (Continued)

Fiscal Year[b]	Transfers to Local Governments	Transfers Abroad	Other Current Expenditure[c]	Total Current Expenditure
1965-66	301.4 (3.1)	33.6 (0.3)	289.4 (3.0)	9,678.9 (100.0)[d]
1966-67	360.5 (3.0)	38.4 (0.3)	663.8 (5.6)	11,906.6 (100.0)
1967-68	319.0 (2.4)	36.9 (0.3)	295.3 (2.2)	13,392.5 (100.0)
1968-69	288.9 (1.9)	51.6 (0.3)	294.2 (2.0)	14,826.7 (100.0)
1969-70	351.4 (2.1)	54.2 (0.3)	171.2 (1.0)	16,483.7 (100.0)
1970-71	577.5 (3.2)	66.1 (0.4)	103.7 (0.6)	18,285.5 (100.0)
1971-72	486.3 (2.3)	83.2 (0.4)	174.7 (0.8)	20,762.0 (100.0)
1972-73	464.9 (2.0)	89.4 (0.4)	76.7 (0.3)	23,175.5 (100.0)
1973-74	398.4 (1.4)	77.3 (0.3)	104.7 (0.4)	27,686.6 (100.0)
1974-75	1,144.7 (4.8)	89.4 (0.3)	217.3 (0.6)	34,140.7 (100.0)
1975-76	2,106.4 (5.3)	100.2 (0.3)	377.9 (0.9)	39,862.5 (100.0)

Source: Same as for Table 1.

a, b.   See footnotes to Table 1.

c.   Includes subsidies and gross financing provided to government enterprises for other than capital expenditure purposes.

d.   Figures in brackets are percentages of total current expenditures.   Details may not add up to total due to rounding.

(its share increasing from 1.4 percent in 1973-74 to 4.8 percent in
1974-75, and 5.3 percent in 1975-76) for village development purposes.
Transfers to households have been declining in relative importance,
while the share going to transfers abroad has remained roughly constant.

The share of the "other current expenditures" category, which
includes subsidies to the private sector as well as to government enter-
prises for other than capital expenditure purposes, has generally been
declining.

As can be seen from Table 11, only two categories of current
expenditures show income elasticities greater than that for the current
expenditures as a whole (1.08). These are interest payments (1.43), and
total current transfers (1.13), the latter reflecting unusually large
transfers to local governments in 1974-75 and 1975-76.

During this period, expenditures on goods and services exhibited
an income elasticity of 1.08, while the other categories show less than
unitary income elasticity. Only interest payments (18.2 percent) have
higher than average annual rate of growth (13.3 percent). Expenditure
on goods and services exhibits the highest marginal propensity (0.109)
as would be expected.

An Economic Classification of Capital Expenditures

This classification is presented in Table 10. Among the four
categories comprising capital expenditures, fixed capital formation is

Table 10

AN ECONOMIC CLASSIFICATION OF ACTUAL CAPITAL EXPENDITURES OF
THE CENTRAL GOVERNMENT OF THAILAND[a], 1965-66 TO 1975-76

(In Millions of Current Bahts)

Fiscal Year[b]	Fixed Capital Formation	Capital Transfers	Direct Loans and Advances	Purchase of Financial Assets or Repayment of Liabilities	Total Capital Expenditures
1965-66	3,488.1 (89.9)	102.8 (2.7)	128.6 (3.3)	159.7 (4.1)	3,879.2 (100.0)[c]
1966-67	4,414.0 (88.8)	140.4 (2.8)	211.6 (4.3)	207.5 (4.2)	4,973.5 (100.0)
1967-68	5,638.6 (89.6)	150.0 (2.4)	141.7 (2.3)	359.8 (5.7)	6,290.1 (100.0)
1968-69	6,093.2 (89.7)	150.2 (2.2)	216.1 (3.2)	330.5 (4.9)	6,790.0 (100.0)
1969-70	6,225.5 (85.7)	246.3 (3.4)	457.1 (6.3)	332.0 (4.6)	7,260.9 (100.0)
1970-71	7,546.6 (87.2)	323.4 (3.7)	507.4 (5.9)	272.6 (3.2)	8,650.0 (100.0)
1971-72	7,009.1 (86.8)	264.6 (3.3)	493.4 (6.1)	304.1 (3.8)	8,071.2 (100.0)
1972-73	6,355.6 (86.5)	231.9 (3.2)	647.7 (8.8)	108.8 (1.5)	7,344.0 (100.0)
1973-74	6,565.1 (93.6)	232.8 (3.3)	66.1 (0.9)	146.9 (2.1)	7,010.9 (100.0)
1974-75	7,294.8 (77.7)	1,546.1 (16.5)	305.2 (3.3)	240.1 (2.6)	9,386.2 (100.0)
1975-76	11,258.9 (81.5)	2,461.8 (17.8)	33.2 (0.2)	69.0 (0.5)	13,822.9 (100.0)

Source: Same as for Table 1.

a, b.   See footnotes to Table 1.

c.   Figures in brackets are percentages of total capital expenditures. Details may not add up to
total due to rounding.

by far the largest. It accounted for between 77.7 percent and 93.6 percent of total capital expenditures during this period. Relatively low proportions allocated to this category in 1974-75 and 1975-76 may once again be explained by noting that during these two years large sums were transferred to local governments for village development purposes. Thus, capital transfers, which accounted for 3.3 percent of capital expenditures in 1973-74, jumped to 16.5 percent in 1974-75 and 17.8 percent in 1975-76. It should be noted that during 1971-72 to 1973-74, expenditures on fixed capital formation declined in absolute terms in each of the three years. Expenditures on direct loans and advances became relatively more important between 1965-66 and 1972-73, but have declined substantially since than. In 1975-76, this category accounted for only 0.2 percent of total capital expenditures. Expenditures on the last category, i.e. net purchases of financial assets have also become relatively less important during this period.

As shown in Table 11, income elasticity of fixed capital formation (0.62) is even less than that for capital expenditures as a whole (0.69), while income elasticity of capital transfers is found to be nearly unitary. Average annual rates of growth also exhibit a similar pattern. Due to its overwhelming importance, expenditure on fixed capital formation has the largest marginal propensity (0.023).

The above analysis again indicates a strong preference on the part of the central government of Thailand to accomplish its objectives by direct rather than by indirect means.

Table 11

ESTIMATES OF INCOME ELASTICITY, MARGINAL PROPENSITY, AND AVERAGE ANNUAL RATES OF GROWTH OF ACTUAL
CURRENT, CAPITAL, AND TOTAL EXPENDITURES OF THE CENTRAL GOVERNMENT OF THAILAND, BY ECONOMIC CATEGORIES[a]

Category[b]	INCOME ELASTICITY			MARGINAL PROPENSITY			AVERAGE ANNUAL RATE OF GROWTH			
	Coefficient	Constant Term	R^2	Coefficient	Constant Term	R^2	Coefficient	Coefficient x 2.30259	Constant Term	R^2
CURRENT EXPENDITURES	1.09	(-1.37)	(0.98)	0.137	(-1011.7)	(0.99)	(0.058)	13.3[c]	(3.94)	(0.99)
On Goods & Services	1.08	(-1.40)	(0.98)	0.109	(-487.0)	(0.98)	(0.057)	13.2	(3.85)	(0.99)
Interest Payments	1.43	(-4.16)	(0.88)	0.015	(-354.8)	(0.87)	(0.079)	18.2	(2.76)	(0.97)
Total Current Transfers	1.13	(-2.67)	(0.90)	0.014	(-489.3)	(0.90)	(0.057)	13.1	(2.85)	(0.83)
Current Transfers to Households	0.91	(-1.73)	(0.92)	0.006	(81.3)	(0.94)	(0.047)	10.7	(2.70)	(0.88)
Current Transfers to Local Governments[d]	0.47	(0.18)	(0.31)	0.001	(248.5)	(0.20)	(0.025)	5.7	(2.46)	(0.44)
Current Transfers Abroad	0.87	(-2.72)	(0.78)	0.0003	(18.3)	(0.73)	(0.050)	11.4	(1.49)	(0.92)
CAPITAL EXPENDITURE	0.69	(0.28	(0.71)	0.031	(2586.8)	(0.70)	(0.037)	8.6	(3.63)	(0.75)
Fixed Capital Formation	0.62	(0.62)	(0.68)	0.023	(2843.1)	(0.65)	(0.034)	7.8	(3.60)	(0.74)
Capital Transfers[d]	0.99	(-2.78)	(0.55)	0.001	(61.3)	(0.34)	(0.048)	11.1	(2.04)	(0.66)
TOTAL EXPENDITURE	0.99	(-0.69)	(0.96)	0.168	(1575.0)	(0.96)	(0.052)	12.0	(4.11)	(0.97)

a, b, c.   See corresponding footnotes for Table 8.

d.   Excludes 1974-75 and 1975-76 because of unusually large expenditures in this category.

Durban-Watson (D-W) Statistic is not reported as at least fifteen observations are necessary
to apply the D-W test meaningfully.

A Cross Classification of Current And Capital Expenditures

A cross classification of the expenditures of the central government of Thailand is presented in Table 12. The data contained in the table indicate that for current expenditures on all social services, reliance on direct means, i.e., the proportion of current expenditures spent on goods and services, has increased during the period, while reliance on indirect means, i.e., the proportion of all current transfers, has declined. This is largely due to a decline in the transfers component of expenditures on social services and welfare, the only category where transfers are a significant factor.

In contrast to the current expenditures on all social services, reliance on direct means, i.e., the proportion of expenditures devoted to fixed capital formation, has declined for capital expenditures. The main items responsible for the increasing share of capital transfers in total capital expenditures are 'other social services' (not shown in the talbe), and transfers to local government for health purposes.

Expenditures on total current transfers, as a percentage of total current expenditures on economic services remained almost unchanged between 1965-66 and 1970-71, but increased very sharply in 1975-76 due to large transfers to local governments for village development. Thus, the relative importance of direct means in expenditure on economic services declined in 1975-76. Capital expenditures on economic services also follows the same general pattern.

Table 12

A CROSS CLASSIFICATION OF SELECTED CATEGORIES OF EXPENDITURES OF THE
CENTRAL GOVERNMENT OF THAILAND, 1965-66, 1970-71 AND 1975-76

(Millions of Current Bahts)

Functional Categories Economic Categories	1965-66				
	All Social Services	Education	Health	Social Services & Welfare	Economic Services
Current Expenditure	2919.4 (100.0)[a]	1800.1 (100.0)	402.7 (100.0)	526.2 (100.0)	1277.9 (100.0)
Expenditure on Goods & Services	2206.1 (75.6)	1655.6 (92.0)	373.6 (92.8)	64.7 (12.3)	1052.3 (82.3)
Total Current Transfers	653.3 (22.4)	144.4 (8.0)	29.0 (7.2)	461.5 (87.7)	4.7 (0.4)
To Households	579.6 (19.9)	80.9 (4.5)	25.1 (6.2)	461.5 (87.7)	1.3 (0.1)
To Local Governments	58.5 (2.0)	50.7 (2.8)	1.8 (0.4)	-	0.4 (-)
To Abroad	15.2 (0.5)	12.8 (0.7)	2.1 (0.5)	-	3.0 (0.2)
Other Financing to Government Enterprises	60.0 (2.0)	-	-	-	220.9 (17.3)
Capital Expenditure	882.4 (100.0)	456.4 (100.0)	169.6 (100.0)	28.0 (100.0)	2399.7 (100.0)
on Fixed Capital Formation	873.9 (99.0)	455.4 (99.8)	169.6 (100.0)	28.0 (100.0)	2084.0 (86.8)
Capital Transfers	8.5 (1.0)	1.0 (0.2)	-	-	84.0 (3.5)
To Local Governments	7.4 (0.8)	-	-	-	84.0 (3.5)
To Others	1.1 (0.1)	1.0 (0.2)	-	-	-
Direct Loans and Advances	-	-	-	-	128.6 (5.4)
To Local Governments	-	-	-	-	12.9 (0.5)
To Others	-	-	-	-	115.7 (4.8)
Net Purchases of Financial Assets	-	-	-	-	103.0 (4.3)

Table 12   (Continued)

Functional Categories / Economic Categories	1970-71				
	All Social Services	Education	Health	Social Services & Welfare	Economic Services
Current Expenditure	4608.1 (100.0)	3135.7 (100.0)	633.6 (100.0)	728.0 (100.0)	2027.6 (100.0)
Expenditure on Goods & Services	3647.5 (79.2)	2859.3 (91.2)	597.5 (94.3)	123.5 (17.0)	1999.8 (96.5)
Total Current Transfers	928.9 (20.2)	274.3 (8.7)	36.1 (5.7)	604.5 (83.0)	6.7 (0.3)
To Households	768.8 (16.7)	120.6 (3.8)	30.4 (4.8)	604.5 (83.0)	1.5 (-)
To Local Governments	122.4 (2.7)	119.9 (3.8)	2.5 (0.4)	-	-
To Abroad	37.7 (0.8)	33.8 (1.1)	3.2 (0.5)	-	6.2 (0.3)
Other Financing to Government Enterprises	29.5 (0.6)	-	-	-	66.0 (3.2)
Capital Expenditure	2592.6 (100.0)	1748.4 (100.0)	169.6 (100.0)	31.1 (100.0)	5317.9 (100.0)
on Fixed Capital Formation	2333.2 (86.8)	1723.4 (98.6)	196.6 (100.0)	31.1 (100.0)	4575.8 (86.0)
Capital Transfers	154.3 (6.0)	25.0 (1.4)	-	-	124.7 (2.3)
To Local Governments	89.6 (3.5)	25.0 (1.4)	-	-	109.4 (2.1)
To Others	64.7 (2.5)	-	-	-	15.3 (0.3)
Direct Loans and Advances	105.1 (4.1)	-	-	-	402.3 (7.6)
To Local Governments	8.1 (0.3)	-	-	-	10.2 (0.2)
To Others	97.0 (3.7)	-	-	-	392.1 (7.4)
Net Purchases of Financial Assets	-	-	-	-	215.2 (4.0)

Table 12   (Continued)

Functional Categories / Economic Categories	1975-76				
	All Social Services	Education	Health	Social Services & Welfare	Economic Services
Current Expenditure	12033.3 (100.0)	8666.9 (100.0)	1636.7 (100.0)	1599.1 (100.0)	6082.0 (100.0)
Expenditure on Goods & Services	9977.6 (82.9)	8015.5 (92.5)	1601.3 (97.8)	245.9 (15.4)	4016.8 (66.0)
Total Current Transfers	2054.6 (17.1)	651.3 (7.5)	35.4 (2.2)	1352.2 (84.6)	1712.0 (28.1)
To Households	1845.8 (15.3)	452.7 (5.2)	28.7 (1.8)	1350.7 (84.5)	0.3 (-)
To Local Governments	156.5 (1.3)	152.9 (1.8)	1.0 (0.1)	1.5 (0.1)	1696.2 (27.9)
To Abroad	52.3 (0.4)	45.7 (0.5)	5.7 (0.3)	-	15.8 (0.3)
Other Financing to Government Enterprises	1.0 (-)	-	-	1.0 (0.1)	351.4 (5.8)
Capital Expenditure	4319.8 (100.0)	3332.5 (100.0)	509.0 (100.0)	20.7 (100.0)	8239.9 (100.0)
on Fixed Capital Formation	3877.9 (89.8)	3264.5 (98.0)	272.6 (53.6)	20.7 (100.0)	6433.8 (78.1)
Capital Transfers	441.8 (10.2)	68.0 (2.0)	236.4 (46.4)	-	1766.0 (21.4)
To Local Governments	307.9 (7.1)	68.0 (2.0)	236.4 (46.4)	-	1766.0 (21.4)
To Others	133.9 (3.1)	-	-	-	-
Direct Loans and Advances	-	-	-	-	33.2 (0.4)
To Local Governments	-	-	-	-	-
To Others	-	-	-	-	33.2 (0.4)
Net Purchases of Financial Assets	-	-	-	-	6.7 (-)

Source: Same as for Table 1.
a.   details may not add up to total due to rounding and due to omission of subsidies. Figures in brackets are percentages of respective heads.
-    zero or negligible.

These large transfers in 1975-76 (and also in 1974-75) may have been an attempt on the part of the civilian government ruling the country at the time to reduce the resentment felt by local governments towards centralized control from Bangkok. It is not clear whether the new military-backed government will continue these transfers.

To summarize, an analysis of the cross classification of social and economic services reveals a strong tendency towards centralized control, with some tentative steps towards decentralization in economic services in the last two years of the period under consideration.

SUMMARY AND CONCLUSIONS

In this paper, a functional-economic analysis of the expenditures of the central government of Thailand has been presented. It reveals the following. The size of its government, as measured by expenditures to GDP ratio, is not only one of the lowest among ASEAN countries, but also unlike its ASEAN partners, it has not been growing in recent years. As a result, income elasticity, average annual rates of growth, and marginal propensity, especially for total and capital expenditures are substantially below the corresponding values for other ASEAN countries.

During the period, expenditures on debt servicing, education and defence have received a high priority, while expenditure on economic services has received a low priority, especially in the 1970's. This neglect of economic services would have to be corrected in the coming years. However, neither expenditures on social services nor on economic services have been adequate to the need.

An analysis of the economic and cross classifications indicates a strong preference on the part of the Thai government to accomplish its tasks through direct rather than indirect means. However, a substantial increase in transfers for village development projects in 1974-75 and 1975-76 may respresent tentative steps towards accomplishing some of the economic services indirectly. Whether the new military backed government will continue this experiment is not clear.

Since the functional-economic classification is already being

compiles by the Bank of Thailand, it would be desirable to publish it on a regular basis in its Monthly Bulletin. Also, the usefulness of the present classification would be enhanced if some disaggregation were to be introduced, for example, a breakdown of expenditures on goods and services into expenditure on wages and salaries, on other goods and services purchased from the domestic and foreign sectors, etc. It may also be desirable to publish the relative importance of domestic and foreign sources in the financing of various functions.

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The Analysis of the Causes of Instability
in Individual Export Commodities in Thailand,
1957-1974

by

Praiphol Koomsup

THE ANALYSIS OF THE CAUSES OF INSTABILITY IN INDIVIDUAL

EXPORT COMMODITIES IN THAILAND, 1957-1974 [1]

by Praiphol Koomsup

1. Introduction

In this article we attempt to determine whether fluctu-
ations in export earnings from each of Thailand's major export
commodities have been brought about mainly by supply or demand
conditions. We must emphasize from the beginning that in reality
instability in earnings from an export commodity is a result of
the combination of changes and shifts in both supply and demand
for that commodity. But what we would like to find out is whether
supply or demand plays a dominant role in creating earnings fluctu-
ations for each individual commodity. It may turn out that both
have an equally important influence on earnings instability, but
in most cases, as we will see, only one is found to be more crucial
than the other.

The identification of the sources of revenue fluctuations
for each export can be very important for a stabilization policy.

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[1] This article is a slightly modified version of chapter 4 of my
unpublished Ph.D. dissertation (5). I am indebted to Professors
Carlos F. Diaz-Alejandro, James L. McCabe, and Robert E. Evenson
for their perceptive comments. Any remaining errors are, of
course, mine.

The policy instruments used to stabilize revenue may be different depending on whether instability is brought about mainly by changes in supply or demand conditions. The policy of price stabilization, for instance, will not stabilize export producers' income if fluctuations in revenue and quantity are highly correlated, as in the case where there are shifts in a supply schedule with an elastic demand curve (see case II below). Also, a policy which aims at reducing changes in supply will be ineffective in reducing revenue fluctuations if it is demand shifts that cause earnings instability.

2. Theoretical framework[2]

Theoretically, we can present four pure and simple cases of fluctuations caused by either shifts in a demand curve or shifts in a supply curve. These are as follows:

Case I: Shifts in a supply curve with an inelastic demand curve[3]

Case I is graphically shown in figures 1a and 1b. With a given inelastic demand curve and some shifts in a supply curve

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2/ The four theoretical cases in this section were initially suggested by James P. Houck.

3/ In the empirical section below we use the annual data of price, volume and value of exports for the analysis. Therefore, the price elasticities of demand and supply in all four cases should be regarded as a short run concept. Any shift of demand and supply schedules should also be interpreted as a yearly one. The demand and supply schedules are, as usual, assumed to be approximately linear.

over time, the trend-corrected movement of export earnings will follow
fluctuations in price. Hence, we would expect a correlation between
revenue and quantity fluctuations. If there is any correlation
between revenue and quantity fluctuations at all, it is likely to be
a negative one. Since price and quantity move in the opposite
directions, this offsetting effect on revenue will cause revenue to
be less variable than price. However, the magnitude of fluctuations
in revenue could conceivably be greater of less than that in quantity.
Because of the low elasticity of the demand curve, price fluctuations
will, on the average, be greater than quantity variations.

Case II: Shifts in a supply curve with an elastic demand
curve

This case is graphically depicted in figures 2a and 2b.
The trend-corrected revenue and quantity will move in the same
direction most of the time, and consequently a significant correl-
ation between revenue and quantity fluctuations is expected. Any
correlation between revenue and price variations is likely to be
negative. Revenue is less variable than quantity, but could fluctuate
more or less than price. The degree of quantity fluctuations should,
on the average, be greater than that of price variations because
demand is elastic.

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Case III: Shifts in a demand curve with an inelastic supply curve

The interaction between a shifting demand curve and a constant and inelastic supply curve will cause price and quantity to move together, with the average price fluctuations being greater than those in quantity (see figures 3a and 3b). Revenue will follow both price and quantity and will have a rather "explosive" movement in the sense that revenue variations exceed instability in both price and quantity. Fluctuations in revenue and price will also be more highly correlated over time than the relationship between revenue and quantity fluctuations.

Case IV: Shifts in a demand curve with an elastic supply curve

In this case revenue still has an explosive movement and moves with price and quantity. But unlike case III, quantity fluctuates more than price and the correlation between changes from trends of revenue and those of quantity is relatively more significant (see figures 4a and 4b).

Therefore, to identify the dominant source of fluctuations we first have to see whether the degree of revenue instability (RI) is lower than either of those of price instability (PI) and quantity instability (QI). If this is so, then RI is said to be nonexplosive and fluctuations in earnings come mainly from shifts in supply. Then
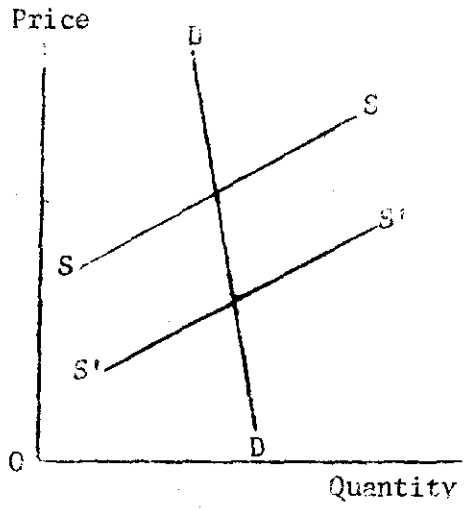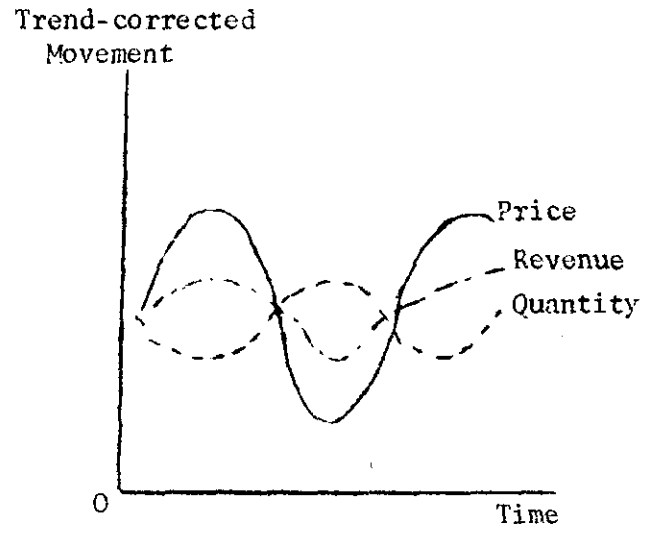
Figure 1a

Figure 1b

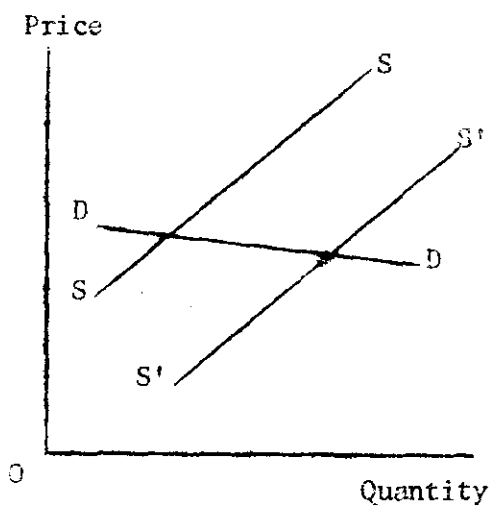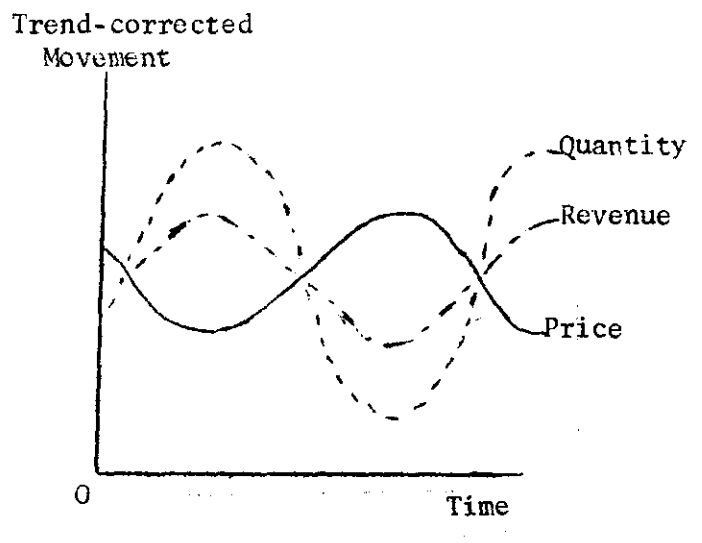Case I: Supply Shifts and Inelastic Demand.

Figure 2a

Figure 2b

Case II: Supply Shifts and Elastic Demand.

Price

Trend-corrected
Movement
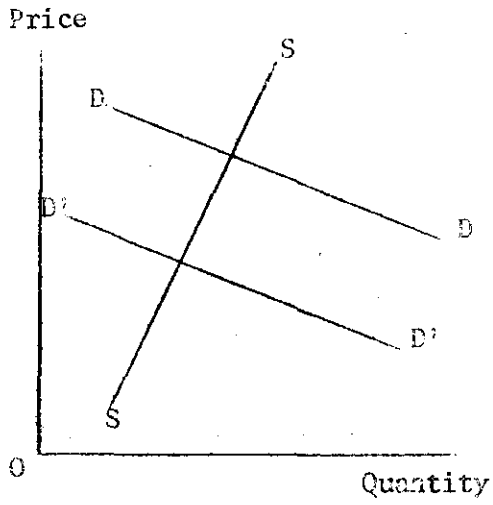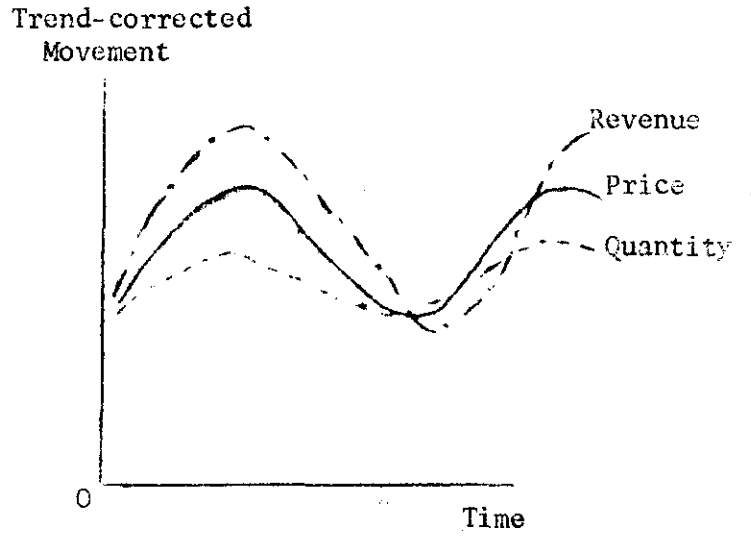
S

D

D'

D

D'

S

O
Quantity

O
Time

Revenue

Price

Quantity

Figure 3a

Figure 3b

Case III: Demand Shifts and Inelastic Supply.

Price

Trend-corrected
Movement

D

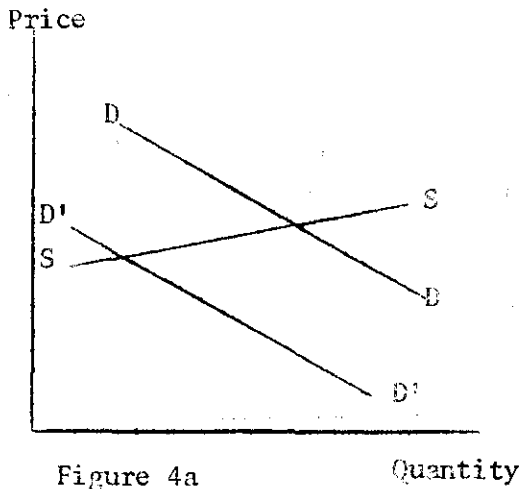D'

S

S

D
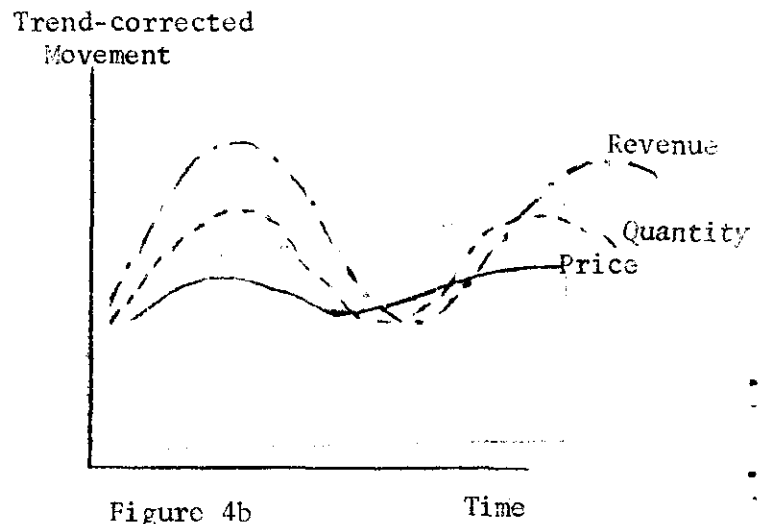
D'

Revenue

Quantity

Price

Figure 4a
Quantity

Figure 4b
Time

Case IV: Demand Shifts and Elastic Supply.

we can determine whether it is case I (inelastic demand) or case II (elastic demand) by examining if

(i) QI is less than PI; and

(ii) the correlation between RI and PI is significantly high or higher than that between RI and QI.

If both (i) and (ii) are true, then instability is of the type in case I. If not, then case II explains the situation.

However, if RI is greater than both PI and QI, RI is explosive and is likely to be brought about by demand shifts. Again, to decide if it is case III (inelastic supply) or case IV (elastic supply), we must see if

(i) QI is less than PI; and

(ii) the correlation between RI and PI is significantly higher than that between RI and QI.

If the answers to (i) and (ii) are affirmative, it is case III. If not, the situation is likely to be categorized into case IV.

For some types of exports which can be stored for a length of time, changes in inventory holdings cannot be ignored in the analysis. Inventory holdings can be done by private traders, government agencies, and intergovernmental organizations. The purpose of the holdings are varied. Stocks may be held mainly for speculative profits. They can be held to compensate for imbalances between

demand and supply in the future. Alternatively, stocks are used as a buffer to stabilize prices, such as in the price stabilization scheme of the International Tin Agreement.

Changes in stocks can be looked at in two ways. First, if changes in stock holdings and releasings are regarded as parts of changes in total demand and total supply, then demand and supply elasticities are likely to be higher than those in the case without inventory changes. An increase in prices will prompt the release of the goods in the stockpile, and will discourage stock holdings. While a decrease in prices will encourage more inventory demand and stop the release of the stocks into the market. Therefore, if inventory demand and supply are included as part of total demand and supply, the elasticities of both will increase.

Secondly, the operation of buffer stocks in price stabilization can be seen as an attempt to shift supply and demand schedules in order to equate demand and supply at a given price or a set of prices. When an excess supply of the commodity to be stabilized occurs, the buffer stock authority will buy enough quantity of that commodity and increase total demand to match total supply, thus shifting the demand schedule upwards and to the right. On the other hand, when there is an excess demand, the authority will sell some of the stockpile and shift the supply schedule downwards and to the right.

Therefore, it seems that the inclusion of inventory holdings and releasings into our analytical framework should not present any

problem if we would interpret total demand and supply as including
changes in stocks. In the case of Thailand, changes in stocks are
not likely to play a prominent role in determining changes and
shifts in demand and supply, since most major exports are agricultural
products which cannot easily be stored in large quantities. One not-
able exception is tin, which has in fact been stockpiled by the US as
one of its strategic minerals and by the International Tin Agreement
as a buffer stock for price stabilization.

3. Empirical results of instability identification

The instability indices for prices, quantities, and earnings
of individual export commodities in Thailand are shown in Table 1.
Tables 2 and 3 contain the results of linear least-square regression
between RI and QI, and between RI and PI respectively. The results
of source identification of earnings instability for individual
export commodities in Thailand are shown in Table 4. The first
observation on the overall results in Table 4 is that all export
commodities with explosive movements of earnings (i.e. those in case
III and IV), with the exception of tin, have their contribution
percentages higher than their shares in total export earnings.[4]
This is probably what we would expect since for these commodities

[4] The "contribution percentage" is computed by weighting the
average value of each export commodity by its instability index,
summing the weighted averages of all export commodities, and
then computing each commodity's weighted average as a percentage
of the total of weighted averages. The instability index used
here is the mean of the absolute value of percentage deviations
from five-year moving averages of earnings from each export com-
modity. The concept of the contribution percentage has its origin
in J.L. Kingston (4). Detailed results on the contribution percent-
ages for Thailand's major exports are shown in section 3.5, chapter
3 of my dissertation (5).

fluctuations in prices and quantities reinforce, rather than offset, each other, and thus accentuating revenue instability. For this reason they are more likely to contribute disproportionately more to total instability than those "nonexplosive" commodities.

The second observation is that no commodity can be classified as case I where the interaction between shifts in supply and inelastic demand creates fluctuations in revenue. This is perhaps because none of Thailand's exports accounts for such a large share in total world market as to make world demand for it inelastic, even in the short run. However, the explanation applies to the commodities in case II only, since we do not know the degree of demand elasticity for those in cases III and IV.

Thirdly, it should be noted that all export commodities in the supply-shift case (except cement) are in the category of food-stuffs, while those in the demand-shift cases (except corn and sorghum) are minerals and industrial raw materials. Moreover, most commodities in the demand-shift cases are exported mainly to in-dustrialized countries. The result for the supply-shift case is mixed. While some, such as rice, mungbean and cement, are exported mostly to LDC's, the others are not. The evidence seems to suggest that the food-type exports are more subject to supply-related fluctu-ations, which are probably caused by such factors as weather, rain-fall, and flood, than the exports of minerals and raw materials which depend mainly on the demand of industrial activities in developed countries.

Finally, for most export commodities, fluctuations in quantity are greater than those in price. This is also reflected in the result that the weighted average of quantity fluctuations is larger than that of price fluctuations (14.60% vs. 11.56%). This indicates that over the period under consideration the quantities of Thai exports have been more unstable than their prices. Moreover, the correlation between instability in export revenue and in quantity is significantly high and/or higher than that between fluctuations in export earnings and in price for all commodities except rubber. These results are remarkably similar to what MacBean finds in his study of export instability for individual countries.[5] Thus, we are inclined to conclude that there is no evidence which strongly suggests that export price stabilization would alleviate the instability in export earnings in Thailand.

Now we turn to the analysis of the instability sources of individual export commodities. Each of them will be examined according to the case into which it has been categorized in Table 4.

Case II: The major source of instability in export earnings in this case is mainly the shifts in supply, coupled with a relatively stable and elastic demand curve. The following commodities are found to belong to case II.

Rice: As the main and only staple food of the population and the single biggest earner of foreign exchange in the country,

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5/ MacBean (6), p.46.

Table 1

Average Annual Figures for the Absolute Values of Percentage Deviation from Five-year Moving Average of Price, Quantity, and Earnings of Individual Export Commodities, 1957-1974

Export Commodity	Price Fluctuations (%)	Quantity Fluctuations (%)	Earnings Fluctuations (%)
Rice	11.84	17.30	11.51
Rubber	13.20	4.49	14.42
Tin a/			
Concentrate	13.26	14.02	18.14
Metal	6.90	8.37	11.12
Teak	5.78	13.79	15.01
Corn	7.34	14.63	14.65
Tapioca Products	3.99	13.52	11.94
Jute and Kenaf	15.50	23.19	31.02
Shrimp	23.97	20.59	23.81
Tobacco Leaves	5.75	18.24	19.44
Sugar	40.59	51.59	47.66
Mungbean	7.82	15.90	11.74
Sorghum	25.69	32.42	34.64
Cement	14.72	36.98	30.93
Other	–	–	7.14
Total	–	–	7.03
Weighted Average b/	11.56	14.60	15.38

Note: All fluctuations are measured in terms of percentage deviations from five-year moving averages.

a/ The data for tin concentrate are from 1957 to 1967, and those for tin metal are from 1965 to 1974.

b/ We use the average share in total export earnings (excluding "other" commodities) as a weight for each commodity.

Source Computed from data in Bulletin of the Bank of Thailand, various issues.

Table 2

Regression Results on the Relationship between Earnings Fluctuations and Quantity Fluctuations in Thailand's Major Export Commodities, 1957-1974

$$(PI)_i = \underset{(t_a)}{a} + \underset{(t_b)}{b(QI)_i}$$

where $(PI)_i$ is fluctuations in earnings from export i,

$(QI)_i$ is fluctuations in quantity of export i,

a, b are a constant and a coefficient respectively, and t_a, t_b are t-statistics of a and b respectively.

Export Commodity	a (t_a)	b (t_b)	R^2	F	d
Rice	-0.01 (-0.31)	0.27 $(1.87)^d$	0.16	2.29	1.42^h
Rubber	-0.02 (-0.41)	1.59 $(2.55)^c$	0.26	4.22	1.81^h
Tin Concentrate	-1.63 (-0.30)	1.45 $(5.15)^a$	0.84	26.53^g	1.74^h
Metal	$-5.12 (-1.43)^e$	1.04 $(4.72)^a$	0.85	22.28^g	1.32^i
Teak	-0.02 (-0.82)	0.60 $(5.08)^a$	0.53	16.57^g	1.62^h
Corn	-0.03 (-1.08)	0.89 $(4.87)^a$	0.66	23.29^g	1.22^i
Tapioca Products	$-0.02 (-1.96)^d$	0.80 $(10.70)^a$	0.91	121.33^g	0.82^j
Jute and Kenaf	0.003 (0.04)	1.04 $(5.49)^a$	0.71	29.38^g	2.31^h
Shrimp	$-0.13 (-1.92)^d$	0.68 (2.47)	0.34	6.18^g	1.13^i

Table 2 (continued)

Export Commodity	a (t_a)	b (t_b)	R^2	F	d
Tobacco Leaves	-0.04 [e] (-1.60)	0.92 [a] (8.52)	0.86	73.71 [g]	1.69 [h]
Sugar	-0.19 [e] (-1.63)	0.55 [b] (2.72)	0.39	7.35 [g]	1.95 [h]
Mungbean	-0.03 [d] (-1.79)	0.65 [a] (7.44)	0.82	54.67 [g]	1.49 [h]
Sorghum	-0.04 [f] (-1.12)	0.98 [a] (14.52)	0.95	228.00 [g]	1.11 [j]
Cement	-0.04 (-0.84)	0.71 [a] (6.72)	0.79	45.14 [g]	1.73 [h]

Note: The figures in parentheses are t-statistics. The 1957-1967 data are used for tin concentrate, and the 1965-1974 for tin metal.

a: The estimate is significantly nonzero at the 0.5% level.

b: The estimate is significantly nonzero at the 1% level.

c: The estimate is significantly nonzero at the 2.5% level.

d: The estimate is significantly nonzero at the 5% level.

e: The estimate is significantly nonzero at the 10% level.

f: The estimate is significantly nonzero at the 15% level.

g: The coefficient of determination is significantly nonzero at the 5% level.

h: The Durbin-Watson tests indicate no autocorrelation at the 5% level.

i: The Durbin-Watson tests indicate inconclusive results at the 5% level.

j: The Durbin-Watson tests indicate positive autocorrelation at the 5% level.

Source: Computed from the 1957-1974 data in Bulletin of the Bank of Thailand, various issues.

Table 3

Regression Results on the Relationship between
Earnings Fluctuations and Price Fluctuations in
Thailand's Major Export Commodities, 1957-1974

$$(RI)_i = a + b(PI)_i$$

where $(RI)_i$ is fluctuations in earnings from export i,

$(PI)_i$ is fluctuations in price of export i,

a, b are a constant and a coefficient respectively, and t_a, t_b
are t-statistics of a & b respectively

Export Commodity	a (t_a)	b (t_b)	R^2	F	d
Rice	0.003 (0.11)	0.28 (1.57)[d]	0.11	1.48	1.97[g]
Rubber	-0.01 (-0.66)	1.08 (14.76)[a]	0.92	138.00[f]	2.04[g]
Tin Concentrate	5.03 (0.85)	1.11 (3.93)[a]	0.76	15.42[f]	1.78[g]
Metal	6.23 (0.60)	0.84 (0.70)	0.11	0.49	0.96[i]
Teak	-0.04 (-1.04)	-0.03 (-0.26)	0.35×10^{-2}	0.04	1.15[i]
Corn	-0.0002 (-0.003)	0.78 (1.68)[d]	0.19	2.81	2.71[h]
Tapioca Products	-0.07 (-1.79)[c]	-1.24 (-1.51)[d]	0.16	2.29	1.30[h]
Jute and Kenaf	-0.02 (-0.22)	1.21 (2.56)[b]	0.35	6.46[f]	1.80[g]
Shrimp	-0.10 (-2.59)[b]	0.23 (1.22)[c]	0.11	1.48	1.13[h]
Tobacco Leaves	-0.12 (-1.83)[c]	0.73 (0.89)	0.06	0.77	0.65[i]

Table 3: (continued)

Export Commodity

Sugar	-0.31 $(-2.54)^{b}$	0.42 $(1.71)^{d}$	0.20	3.00	0.89^{i}
Mungbean	-0.04 $(-1.11)^{e}$	-0.53 $(-1.37)^{d}$	0.13	1.79	1.64^{g}
Sorghum	-0.12 $(-1.98)^{e}$	0.66 $(2.62)^{b}$	0.36	6.75^{f}	1.42^{g}
Cement	-0.15 $(-1.74)^{d}$	-0.30 (-0.59)	0.03	0.37	1.55^{g}

Note: The figures in parentheses are t-statistics. The 1957-1967 data are used for tin concentrate, and the 1965-1974 data for tin metal.

a: The estimate is significantly nonzero at the 0.5% level.
b: The estimate is significantly nonzero at the 2.5% level.
c: The estimate is significantly nonzero at the 5% level.
d: The estimate is significantly nonzero at the 10% level.
e: The estimate is significantly nonzero at the 15% level.
f: The coefficient of determination is significantly nonzero at the 5% level.
g: The Durbin-Watson tests indicate no autocorrelation at the 5% level.
h: The Durbin-Watson tests indicate inconclusive results at the 5% level.
i: The Durbin-Watson tests indicate positive autocorrelation at the 5% level.

Source: Computed from the 1957-1974 data in Bulletin of the Bank of Thailand, various issues.

Table 4

Identification of Sources of Instability in Earnings of Thailand's Major Export Commodities

Export Commodity	Case Number	Is Contribution Percentage Higher than Export Share?
Rice [a]	II	No
Rubber	III	Yes
Tin		
Concentrate	IV	No
Metal	IV	No
Teak	IV	Yes
Corn [a]	IV	Yes
Tapioca Products	II	No
Jute and Kenaf	IV	Yes
Shrimp [a]	II	Yes
Tobacco Leaves	IV	Yes
Sugar	II	Yes
Mungbean	II	No
Sorghum	IV	Yes
Cement	II	Yes

Note: Case I: Supply shifts and inelastic demand.
Case II: Supply shifts and elastic demand.
Case III: Demand shifts and inelastic supply.
Case IV: Demand shifts and elastic supply.

[a] There is a certain degree of ambiguity on the classification.

Source: The process of identification is by examining the results in Tables 1, 2 and 3.

rice has always been subject to some government policies. In particular, the supply of rice exports has been much influenced by the policy instruments, e.g. a variable specific export tax called the rice premium, quantity restrictions which sometimes include a total ban on exports, and a rice reserve requirement. The rice policy goals which have been stated at one time or another include, among others,

(i) adequate availability of rice for domestic consumption:

(ii) "reasonable" Levels of internal rice prices; and

(iii) maximum foreign-exchange earnings.

It is clear that some of these goals are conflicting with one another. In addition, the policy makers have to contend with fluctuations in domestic rice production and in world rice prices which usually reflect changes in foreign demand for Thai rice. The difficulties arising from conflicting policy goals and instability have made changes in the government policy on rice exports frequent and rather erratic. In 1958 and 1968, for instance, the government imposed quantity restrictions on exports, and raised the rice premium rates in response to poor rice crops in the previous years in order to curtail export supply and maintain adequate quantity at home. In other years of rice surpluses, the restrictions were relaxed and the premium rates reduced to promote export. However, the time lag between changes in demand and supply conditions and changes in government policy, and thus the effectiveness of the policy, has varied

from year to year. There are some who argue that the policy has been poorly managed and has created uncertainty in trading activities. In the surplus years of 1968-1972, for example, the premium rates were still kept high, thus depriving Thailand of a chance for exporting more competitively. [6] Therefore, it seems that instability in export earnings from rice has stemmed mainly from fluctuations in the export supply which are brought about by frequent, and sometimes unpredictable, policy changes.

Our empirical results concerning the demand elasticity of rice exports are not quite conclusive. Although, quantity fluctuations are definitely greater than price fluctuations, indicating elastic demand, the regression analysis in Tables 2 and 3 for rice exports shows that both quantity fluctuations and price fluctuations are not significantly correlated with earnings instability. There is thus, a partial evidence that the demand for Thai rice exports is elastic. This ambiguity may very well be true since most studies suggest that the demand elasticity for Thai rice exports has changed over the years depending on the world production of rice. It is believed that the demand elasticity was low during the period prior to 1968, then it became quite high during the surplus years extending from 1968 to mid 1972.[7] If this is true, then it may explain the inconclusive results of our regression

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6/ For the criticisms on the rice price policy of Thailand, see Siamwalla (8), p.153-55, and Wibulswasdi (14), p.56.

analysis which cover the period during which the demand elasticity
seemed to be changing.

Sugar:[8/]   Sugar is the most unstable export commodity, with
the highest value of fluctuations in price, quantity and export earn-
ings (see Table 1). The domestic production of sugar has risen so
rapidly since 1957 that, once being an import item, sugar is becoming
one of the highly significant export commodities in Thailand. But
the increase in production is not without fluctuations. Insufficient
rainfall in some years (e.g. 1956 and 1963) caused reductions in
sugar production, and hence in sugar export. Uncertainty in production
and export was also associated with the government policy of sub-
sidization for sugar export. Though being successful in promoting
the sugar production for export in the beginning, the subsidy had
become so excessive that there was an excess supply of sugar export
in some years. The subsidy was repealed in 1966 mainly because it
was no longer needed for the increasingly competitive sugar from
Thailand. Even without uncertainty caused by the government subsify,
the weather is still the main factor which causes great variations in
production and export. In 1968, for instance, bad weather cut
domestic sugar production down to the point where Thailand could not
export any sugar. Thus, there is enough evidence to support our
result that supply shifts mainly cause export earnings instability
for sugar.

7/ Siamwalla (8), p.153 and Wibulswasdi (14), p.57.

8/ The discussion on sugar export and production is based mainly on
   the study by Thanavibulchai (12), chapter II.

On the demand side, there has been no empirical studies
done on the price elasticity of demand for Thai sugar exports. The
small share in world sugar trade of the sugar export from Thailand
may be used to, at least partially, explain why its demand elasticity
with respect to price is high, as we find in this study.[9]

Tapioca products, mungbean, cement and shrimp:

There is not enough information from other independent
studies either to support or contradict our results with respect to
the classification of these export commodities. It has been mentioned
that there is a problem in tapioca (or cassava) cultivation since the
crop depletes the soil of necessary nutrients and tapioca farmers
tend to exhaust the soil and move on to other plots of land.[10] But
it is not at all clear that this has caused supply fluctuations.

9/ It should be noted here that it is not accurate to speak of the
world sugar market as a free and integrated one. The world
sugar market has been divided by various international agreements,
both bilateral and multilateral. It can be broken down into at
least 3 segments: the market under the International Sugar
Agreements, the bilateral preferential agreement market (e.g. the
British Commonwealth preferential agreement), and the rest which
can be regarded as a freer market. Thailand joined the Inter-
national Sugar Agreement (ISA) in 1968 and left it in 1971
because of its dissatisfaction over its export quota allocation.
Therefore, the foreign demand for the Thai sugar exports over
the years is not quite a homogeneous one. However, both in and
out of ISA market, it is still true that Thailand has not been
regarded as a major exporter of sugar.

10/ See "Diversification of Exports" (2), pp. 65-66.

The result on shrimp export is very ambiguous. First, the difference between price fluctuations and earnings fluctuations is not so significant percentagewise. And secondly, while price fluctuations exceed quantity fluctuations, the correlation between QI and RI is significantly higher than that between PI and RI. This thus gives conflicting conclusions on the degree of demand elasticity.

Case III: In this case, the major source of revenue instability is demand shifts, with a relatively stable and in-elastic supply curve. The only export commodity which falls into this category is rubber.

Rubber: Being an industrial raw material which is imported mostly by industrialized countries, rubber exports have been very sensitive to changing demand caused by fluctuating in-dustrial activities in those countries. Moreover, the demand for rubber has been adversely affected by the development of synthetic rubber. The degree of technical substitutability of synthetic rubber for natural rubber has been increased and did depress the prices of natural rubber until about 1972.[11/] But since 1973, the prices of natural rubber has begun to reach higher levels than before and Thailand's exports of natural rubber have increased sub-stantially both in terms of volume and earnings. This may be due

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11/ For a brief discussion on this subject during the period 1957-1972, see Wibulswasdi (14), pp. 83-85.

in part to the fact that the prices of the petroleum products which
are used in synthetic rubber production has risen with crude oil
prices, and thus enabling natural rubber to improve its competitive-
ness in the world market.

Fluctuations in supply, on the other hand, are small,
relative to those in demand, since production is usually not affected
greatly by changes in weather conditions. It is found in most
econometric studies on rubber-producing countries that the supply
schedule or rubber is price inelastic. This seems reasonably true
in view of the fact that it takes about seven years after planting
before any rubber can be tapped. Stifel also finds that the price
elasticity of rubber production in Thailand has fallen since the
second World War, mainly because the producers' increasing speciali-
ation in the crop has reduced their production flexibility.[12] A
supply of export is generally more price elastic than total domestic
production. But since most of rubber output is exported, Stifel's
and others' findings should indicate a rather inelastic supply of
rubber exports in most producing countries including Thailand.

Case IV: A combination of demand shifts and an elastic
supply schedule is the main source of instability in export earnings
in this case. The following export commodities are found to fit the
description of case IV.

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12/ For the discussion on the supply elasticity of rubber in Thailand,
    see Stifel (11), p.635.

Tin: Tin is clearly one of the most stable export commodities in terms of export earnings, as indicated by the low value of earnings fluctuations in Table 1. Since 1965 most of the tin exported from Thailand has been in the form of metal instead of concentrate. This may contribute even more to the stability in export earnings in later years, since fluctuations in price, volume and earnings are all less for tin metal than for tin concentrate (see Table 1). Another factor which may contribute substantially to earnings stability is the International Tin Agreement (ITA) in which Thailand has participated. It has been found that the International Tin Council (ITC) has played a great role in reducing short-run price fluctuations of tin by operating a buffer stock, coupled with occasional export quotas in some extreme situations. This seems to be satisfactorily accomplished despite the contention by some that the US occasionally released some tin from its strategic stockpile into the world market and disrupted the tin market condition.[13] But there are some who argue that, due to its inadequate resources, the ITC has, to some extent, failed to stabilize the market. According to them, it is the US tin stockpile transactions that have been the determining factor in reducing fluctuations in tin world prices.[14]

13/ The view that the ITC's action has stabilized prices and the US operation on its tin disposal has disrupted the market is presented in Phangmuangdee (7). Wibulswasdi (14), while agreeing that the US disposal program could influence the world tin market, argues that the US has been cooperative with the International Tin Council since 1966 by agreeing to harmonize its operations with the Council's.

14/ Smith and Schink (10).

Like rubber, tin is a raw material used mainly by industrialized countries, and it is subject to some degree of technical substitutability by other rival metals. Thus, tin exports are similarly responsive to changes in demand created by the vicissitudes of the industrial sector in developed countries and by the price competitiveness vis-a-vis other substitute materials. Supply, on the other hand, is likely to be rather stable due to the nature of tin mining which is hardly affected by weather conditions, except for some variations in production costs related to the richness and accessibility of the ore content. It is therefore reasonable to say that the demand for tin exports tends to shift more than the supply.

While our empirical result indicates a rather elastic supply of tin exports, there is a study which shows that tin production is quite inelastic with respect to price in the short run.[15/] We may choose to explain this discrepancy by appealing to the fact that in general export supply is more price elastic than total supply because the former is the excess of total supply over local demand. However, the exports of tin account for most of tin production in Thailand, and it is not clear that this would make the export supply as elastic as our finding suggests. Another possible explanation is that there may exist some significant quantity of tin which is stocked in the country, as it is held in the US stockpile and the ITA buffer stock. Since, as argued in section 2 above, changes in inventory

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15/ Phangmuangdee (7), p.11.

tend to increase supply elasticity, it is possible that the stocks
of tin in Thailand are adjusted to price changes in such a way that
the export supply is rather responsive to prices. This may explain
why we have an inelastic supply of tin output, while at the same time
the supply of tin exports is rather price elastic.

Jute and kenaf: This export commodity group consists mainly
of kenaf, since the production of kenaf, most of which is grown in
the Northeastern region of Thailand far exceeds that of jute.
Therefore, any analysis for the group will be made in terms of kenaf
only. Table 1 shows that export earnings from the group is one of
the most unstable, exceeded only by sugar and sorghum. Every study
on the Thai kenaf exports points to foreign demand as the main source
of revenue fluctuations.[16/] The reason for a volatile foreign market
for Thai kenaf is quite obvious. Due to its quality, kenaf is an
inferior substitute for jute as a raw material for the manufacture
of gunny bags and other fibre products. The world demand for kenaf
is consequently of a residual nature and is dependent upon what
happens in the world jute market. A poor crop of jute in some major
jute-producing countries like India and Bangladesh, for instance, could
drastically increase the demand for kenaf exports from Thailand.
Indeed, this is what occurred in 1961-62, 1965-67, and 1971-73 when,
for some reasons--natural and/or man-made, jute production in India
and Bangladesh was much below normal, causing Thailand's kenaf export

16/ Wibulswasdi (14), pp.23-   Tongpan (13), pp.247-48, Ingram (3),
   p.262, and Silcock (9), p.72.

to sharply rise in terms of both price and volume. The opposite is true when the world jute supply is adequate. Moreover, in recent years the substitution of synthetic products for both jute and kenaf added further to the degree of uncertainty in the demand for both crops.

There is definite evidence that total supply elasticity, thus export supply elasticity, is extremely high for Thai kenaf. Behrman finds the mean price elasticity of total supply of kenaf in Thailand to be 2.70 for the short run and 5.75 for the long run.[17] This has been attributed to two factors which help ease the adjustment of kenaf production to changes in world prices. The first is the fact that kenaf does not compete with many crops in land use. Most of it is grown in the northeastern part of Thailand in the poor-quality soil, for which there is little profitable alternative use. The second factor is that the pre-harvest costs for kenaf are so small, compared to the harvest and post-harvest costs, that the producers can adjust its output in a short period of time and without great loss. For instance, even when kenaf is planted, the grower may decide not to harvest it if prices become too low, since harvesting it and washing fibres may incur costs greater than returns.[18]

Corn: Our result does not enable us to put corn in any definite case. The difference between quantity fluctuations and

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17/ Behrman (1), p. 331.

18/ For these two points, see Tongpan (13), p. 247.

revenue fluctuations is so small that it could be either the demand-shift case or the supply-shift case. However, our speculation is that earnings instability is caused mainly by shifts in demand. There has been tremendous growth in corn production and exports which, most believe, are a response to a big increase in external demand, particularly from Japan. And since most of the corn produced in Thailand is sold abroad, it is likely that foreign demand would very much influence the degree of instability in earnings. Nevertheless, there is some evidence that supply shifts also play a significant role in production increase of corn. Behrman cites two factors influencing corn supply: a successful control of malaria which enlarges inhabitable land in the north central region of Thailand; and an introduction of new and better seeds used in cultivation.[19] In addition, there have recently been signs of supply uncertainty, such as inadequate drying and storage facilities.[20]

The empirical evidence of price elastic supply for corn is perhaps weaker than that in the case of kenaf. Behrman finds the mean price elasticity of planted corn area to be 1.03 in the short run and 2.29 in the long run.[21] Considering the magnitudes of these figures, we may reasonably conclude that the export supply of Thai corn is fairly elastic with respect to price.

19/ Behrman, (1), p.326.

20/ Tongpan (13), p.246.

21/ Behrman (1), p.325.

Teak, tobacco leaves and sorghum: These three export commodities are found to be subject to demand shifts, with elastic supply. Unfortunately, there is scanty information on the empirical side of their exports.

4. Concluding remarks

To sum up, in this article we have tried to identify the causes of instability in export earnings for individual major export commodities of Thailand. The identification process is carried out by examining the relative sizes of and the ralationships among fluctuations in price, quantity, and export earnings. In most cases, it is found that quantity fluctuates more than price, and quantity fluctuations are more correlated with revenue instability than price fluctuations are. While both shifts in demand and supply are found to be responsible for revenue fluctuations, the cases of demand shifts account for more of the total value of all exports examined--54% of the total earnings for the demand-shift cases, as opposed to 46% for the supply-shift case. Most commodities in the demand-shift cases contribute to total instability more than what their relative shares in export earning indicate. This is not surprising since for these commodities price and quantity fluctuate with one another most of the time. Perhaps also not surprising is the finding that the food-type exports are more subject to supply-related fluctuations than the exports of mineral and raw materials

which are affected by instability of demand in industrially
developed countries. As far as we can determine, the price
elasticities of demand and supply for all exports examined are
quite high, with one possible exception in the export supply
elasticity of rubber. While we cannot verify all of our
findings in this chapter, other independent studies avail-
able seem to support most of our results.

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