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TAX INCIDENCE: A CASE STUDY OF THAILAND.

UNIVERSITY OF HAWAII, PH.D., 1978

TAX INCIDENCE: A CASE STUDY OF THAILAND

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF
THE UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN ECONOMICS

MAY 1978

BY

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To my children Asaya and Yongyuth,

and my beloved wife, Pacharee.

ABSTRACT

This study investigates the tax structure of Thailand for the years
1969 and 1971, employing S-coefficients to measure, numerically, the
gressivity of Thai individual taxes as well as the overall tax structure.
In measuring tax burden distribution among the Thai people of different
income classes, household income (a narrow income concept) and adjusted
household income (a comprehensive income concept) are used as the income
bases. Various empirical studies and institutional settings, as well
as the observed behavior of the Thai economy, are employed in making
assumptions as to the shifting and incidence of the Thai taxes.

Investigation is also made, qualitatively, into the "implicit" or
"excess" burden of the taxes due to tax evasion and a trade policy of
import substitution of Thailand. This burden, if taken into considera-
tion, affects the conventional method of tax burden measurement.

Under a comprehensive income base, the Thai tax structure is found
to be regressive approaching proportionality in 1969 (S = -0.010) but
becoming more regressive (S = -0.063) in 1971. Compared with the burden
of a tax distribution under a proportional income tax, the poor and the
lower-middle class Thai bore a relatively higher tax burden than the
middle-rich classes in both years. Measured in terms of Gini-coefficients,
the regressivity of the Thai tax structure increased income inequality,
which was already high, by 0.1 and 0.5 percent for 1969 and 1971,
respectively.

Some recommendations are made aiming at lessening the regressivity
of the tax structure and raising more revenues from the Thai tax system.

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CHAPTER I

INTRODUCTION

Empirical tax incidence studies have long been of interest, dating

back to the pioneer work of Mabel Newcomer[1] and of Gerhard Colm and Helen

Tarasov[2] in 1937 and 1940 respectively. Among earlier prominent U.S.

economists who have followed Newcomer's study are Musgrave, R.A[3] Bishop,

G.A[4] and Beaton, J.R.[5] More recently, studies of tax incidence have

been widely conducted in numerous underdeveloped countries[6] including

Columbia, Jamaica, Peru, Greece, India, Pakistan, and the Philippines.

Although the purposes of these studies may differ in some respects, the

primary focus has been on investigating effects of an existing tax

structure upon the burden distribution among people in various levels

of poverty and relative affluence. Though somewhat different methodolo-

gies and assumptions are used, the findings revealed that the tax

structures in all of the above countries showed a somewhat progressive

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[1]Studies in Current Tax Problems, The Twentieth Century Fund, New
York, 1937, pp. 1-52.

[2]Who pays the Taxes? 76th Cong., 3rd Sess. (1940).

[3]"Distribution of Tax Payment by Income Group: A Case Study for
1958," National Tax Journal, (March, 1951).

[4]"The Tax Burden by Income Class, 1958," National Tax Journal,
(March, 1961).

[5]"Family Tax Burden by Income Levels," National Tax Journal, (March,
1962).

[6]For the summary and reference of these studies, see Luc De Wulf,
"Fiscal Incidence Studies in Developing Countries: Survey and Critique,"
IMF Staff Papers, Vol. 22 (March, 1975).

trend, except that of Greece and the Philippines, which are charac-
terized as regressive.[7] The large number of studies in this field
would indicate that tax incidence analysis is important not only to
inform government about the existing tax burden distribution among the
people of the country concerned; it might also be considered as a
necessary prerequisite to informed tax policy changes.

In case of Thailand, no intensive study of the impact and inci-
dence of taxes had been made prior to 1974, even though the tax system
of Thailand had been developing along Western lines since 1939. Changes
in tax rates were necessarily made arbitrarily with little knowledge
of the effect of the changes upon households or firms. Increasing tax
revenues was the main objective of past tax changes, and the means was
primarily through increased tax rates, especially import duties, with
only little or no attempt to improving methods of tax administration.
Moreover, a relatively grave income inequality problem seem to have
received little attention from the several successive governments of
Thailand.

General View of Thai Economy and Fiscal Structure.

The public sector in Thailand consists of central departments and
ministries, municipalities, and central and municipal public enterprises.
Among these three elements, the central government has played the major
role in determining the fiscal structure of Thailand since 1932. The
central government of Thailand performs all major fiscal functions

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[7]See for example Bird and De Wulf, "Taxation and Income Distri-
bution in Latin America: A Critical Review of Empirical Studies,"
IMF Staff Papers, Vol. 20 (November, 1973).

Table I-1

Indicators of Change in

Economic and Fiscal Structure of Thailand, 1969-1973

(Millions of Baht)

	1969	1970	1971	1972	1973
(1) Growth rate of GNP at 1962 prices	7.8	7.4	5.5	2.8	8.6
(2) Per capita GNP at 1962 prices (Baht)	3,527	3,613	3,738	3,986	4,530
(3) Wholesale price index (1968=100)	103.3	102.8	103.1	111.2	136.6
(4) GNP price-adjusted	124,678	132,605	140,999	143,736	137,101
(5) National government expenditures adjusted	21,009	24,450	26,408	25,753	23,653
(6) National Gov't expenditures adjusted/GNP adjusted	16.8	18.4	18.7	17.9	17.2
(7) Total tax revenue adjusted	16,266	16,601	16,949	17,145	17,891
(8) Total tax revenue adjusted/GNP adj.	13.0	12.5	12.0	11.9	13.0

Source: Monthly Bulletin, Bank of Thailand, Sept. 1973.

Note. Row (1) & (2) from Table V.17. Row (3) from Table V.11.

Row (4) is calculated from GNP at current prices (Table V.16) deflated by price index of row (3). Row (5) is calculated from gov't actual expenditures (Table II.2) deflated by price index of row (3). Row (6) is row (5)/(4). Row (7) from Table II.1 column 19. Row (8) is calculated from row (7)/(4).

through its revenue and expenditure programs. An overview of changes

in economic and fiscal indicators in Thailand between 1969 and 1973

is set forth in Table I-1.

The first row of Table I-1 shows a trend of decreasing growth

rate in GNP, from 7.8% in 1969 to 2.8% in 1972. The slow growth

rate in 1971 and 1972 was mainly due to a severe drought that caused a

considerable decline in agricultural production. However, throughout

this period, per capita GNP of Thailand rose, as shown in row (2).

The level of wholesale prices in row (3) indicates a stable trend from

1969 to 1971 but rises rapidly in 1972 and 1973. Row (4) and (5) show

the adjusted GNP and government expenditures of Thailand respectively.

Both GNP at current prices and government expenditures during 1969 and

1973 are deflated by the wholesale price index in order to eliminate

the effect of price changes on the value of GNP and government expendi-

tures.

Without inquiry into the causes of growth of the public sector[8]

the relative rize of the public sector in Thailand is shown in row (6).

It is clear that the size varied significantly during 1969-1973, increas-

ing by 11% between 1969 and 1971 and decreasing by 8% between 1971

and 1973, even though the total tax revenue of the country (row 7)

increased steadily throughout this period. Row 8 shows a slight fluctu-

ation in the ratio of tax revenues to GNP. In general, tax ratios for

most developing countries are between 8-23% while in most developed

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[8]A brief review of the general causes of the growth of the
government sector is made in J. Burkhead and J. Miner, Public
Expenditure (Chicago: Aldine Publishing Co., 1971), pp. 1-5.

Table I-2

Percentage Composition of

Revenue Structure of Thailand (Central Government Revenues)

1969-1971

Government Revenue	1969	1970	1971	Average
Personal Income Tax	7.0	7.6	8.3	7.6
Corporation Income Tax	5.0	5.3	5.6	5.3
Import duties	32.4	31.6	30.2	31.4
Export duties	9.0	5.0	2.4	5.5
Business taxes	20.3	21.7	22.9	21.6
Selective sales taxes	16.0	17.9	19.4	17.8
Other taxes	2.4	2.6	2.3	2.4
Fiscal monopolies	3.7	3.8	4.6	4.0
Royalties	2.2	2.3	2.3	2.3
Licenses & fees	2.0	2.2	2.0	2.1
Total	100.0	100.0	100.0	100.0

Source: Derived from Monthly Bulletin, Bank of Thailand, (September, 1973)
          Table II.1

countries the ratios are about 25 to 40%[9]. By comparing rows 5 and 7,
it is eveident that the government expenditures exceeded total tax
revenue, implying that the government of Thailand utilized deficit
financing throughout this period.

The revenue structure of the central government, shown in Table
I-2, reveals that the major source of revenue has been indirect taxes.
Import duties, export duties, business tax, and selective sales taxes
combined accounted for, on the average, 76 percent of total revenues
during 1969-1971. This amount is higher than the relative importance
of indirect taxes in Korea (48%), India (43%), Sri Lanka (75%), and
the Philippines (74%).[10] Direct taxes, even though increasing year
by year, produced only an average of about 13% of total government
revenue in Thailand for this period.

Review of Recent Studies of Tax Incidence in Thailand

The first attempt to undertake an intensive study of tax incidence
in Thailand is the M.A. Thesis of Apiratanapimonchai, Somchai.[11]
Taxes included in his 1974 study are divided into two groups. The first
is production and sales taxes, which includes specific and general sales
taxes, custom duties, fees and permits. The second group is comprised

---

[9]For developing countries see Raja J. Chelliah, "Trends in Taxation in Developing Countries," IMF Staff Papers 18, (July, 1971), Table 1. For developed countries, see Musgrave, Richard A. and Musgrave, Peggy B. Public Finance in Theory and Practice (New York: McGraw-Hill, 1973), Table 5-3.

[10]United Nation, Statistical Year Book, 1973, (New York, 1974). Table 191.

[11]A Study of Tax Burden by Income Class in Thailand: A Case Study for 1969 (M.A. Thesis, University of the Philippines, 1974).

of taxes on income and property, which includes individual income tax, corporation income tax, and fees for the private use of motor vehicles and estate registration. These two fees are considered as a proxy for property taxes. Local government taxes were left out of this study. The income concept used is that total income (Y_t) combines money income (wages, salaries, overtime pay, bonuses, net profit and interests, pensions and annuities, money received from rents, and income from other sources) plus income in kind.

Using convenient assumptions as to shifting the burden of the taxes, all indirect taxes are taken to be shifted forward to consumers while all direct taxes, except the corporation income tax, are assumed not shifted. It is assumed that one third of the corporation income tax is shifted forward to consumers, another one third shifted backward to stockholders, and the rest shifted backward to the employees of the companies.

Apiratanapimonchai's study concludes that the overall tax structure of Thailand in 1969 was mildly progressive with respect to income across the various income classes. The regressiveness of the indirect taxes was more than offset by the progressiveness of income and property taxes.

Besides noting the simplistic assumptions as to tax shifting, one might question the appropriateness of using motor vehicle fees as a proxy for property taxes. Since this fee is in the nature of quid pro quo payment, the burden of the fee on the private motor vehicle owner should be considered neutral for distribution analysis, as would any other user charge.

A second study of tax incidence of Thailand for 1969 is the work

of Tearpasert, Apinya.[12] It attempts to show how the tax burden

affected the pattern of income distribution of various income classes.

In addition, the study also investigates the burden of taxes in rela-

tion to various socioeconomic characteristics of households, namely

the tax burden by education of household head, the number of earners,

and the size of the household. For analysis, taxpayers are divided

into region and two/village locations, aiming to see the burden of

the taxes in different geographical areas in Thailand.

Income concepts used in Tearpasert's study are money income (Y_m),

adjusted income I $(Y_t = Y_m + \text{income in kind})$, and adjusted income II

$(Y_{t1} = T_t + \text{rice premiums which she considered as part of the farmers'}$

income). Taxes included are: personal income tax, custom duties,

business tax, excise taxes and rice premiums taxes. Several major

taxes left out from this study include corporation income tax, business

tax, property taxes and local government taxes. Employing simplifying

assumptions similar to those of Apiratanapimonchai's study, Tearpasert

assumes that the personal income tax is not shifted and that all indirect

taxes are proportionally shifted forward to consumers except the rice

premium taxes that are assumed to be shifted backward to farmers in

the form of lower farmers' income.

The basic conclusion of her study is that for Thailand as a whole

the tax burden by income classes is regressive across the various income

classes. The regressiveness of indirect taxes outweight the progressivity

---

[12]*The Redistributive Impact of the Tax Burden on the Income
Distribution of Thailand* (M.A. Thesis, Thammasat University, Thailand,
1975).

of the personal income tax. Tax burden by education of the house-
hold head appears to have no relation to personal income tax, but
the higher the education of the household head the larger the
burden of indirect taxes for households in town. The number of
earners in the family showed no clear relationship to the burden
of both direct and indirect taxes. Finally the study reveals
that the bigger the size of the family, the smaller the burden
of the personal income tax. Conversely the larger the size
of the family, the higher the indirect tax burden on the house-
hold.

It is clear that Tearpasert's conclusion as to the gressivity of
the overall tax structure of Thailand in 1969 is contradictory to that
of the Apiratanapimonchai's study. This difference can be explained
by the differences in taxes included in the studies, allocation
assumptions and income distribution assumptions. Besides the use
of simplifying assumptions as to the shifting of taxes, there are
several other points that seem to be unclear in Tearpasert's study.
First, the analysis of tax incidence by regions must involve a great
deal of arbitrary assignment of each type and amount of taxes to each
income bracket in each region, since data on taxes for each region
are not available. Nowhere in this study is it shown how much each tax
is distributed to each socioeconomic characteristic. Finally, since
the analysis is on the regional level, it is unlikely that any conclu-
sion regarding national distribution of the tax burden or the gressivity
of taxes on the national level can be drawn. However, Tearpasert should
be given credit for her pioneering attempt at this type of study for

Thailand.

The most recent study of the tax burden in Thailand is a Ph. D dissertation done at Michigan State University by Krongkaew, Madhi.[13] The study investigates intertemporal fiscal incidence in Thailand in 1963 and 1969. Taxes and expenditures are studied separately, then combined for net fiscal incidence outcome. As with the above two studies, one income concept is defined as money income (Y_m). The second concept, adjusted income (Y_{t2}), follows that of Pechman and Okner's adjusted family income which is used as the income base in their study.[14] This income concept includes money income plus income in kind (Y_t), an adjustment for under-reported income, net corporate retained earnings, and indirect taxes. These two income concepts are used to derive the pattern of income distribution for the two years under study. The measured Gini concentration ratios with respect to money income was found to be 0.5627 and 0.5550 for 1963 and 1969, respectively, indicating a slight improvement in income distribution during this period. A reverse result was found when adjusted income was applied; Gini concentration ratios rose from 0.4559 in 1963 to 0.4822 by 1969, indicating a worsening in income inequality.

Taxes considered in Krongkaew's analysis are similar to those in the previous studies, i.e., local government taxes are excluded.

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[13]"The Income Redistributional Effects of Tax and Public Expenditures in Thailand", 1976.

[14]Joseph A. Peckman and Benjamin A. Okner, Who Bears the tax Burden? (Washington, D.C.: The Brookings Institution, 1974).

Krongkaew assumes that the personal income tax and a portion of property tax are not shifted. The corporation income tax is assumed fully forward-shifted to the consumer, as are most indirect taxes, except export duties and rice premium taxes which are assumed shifted backward to the producers. Other revenues, namely from government enterprises and monopolies, are also assumed shifted forward.

Krongkaew's study concludes that the burden in 1963 and 1969 is regressive across the income scale when money income is the base but only slightly regressive or nearly proportional when adjusted income is applied. The effect of taxes on the distribution of income shows a worsening trend between 1963 and 1969.

In the expenditure incidence (benefits) study, Krongkaew employs a benefit approach which concentrates on the end result of spending, i.e., the benefits from government expenditures are direct benefits only. This enables him to use the total costs of project spending as a proxy for benefits received. These benefits were allocated in the same manner as in the tax study.

With money income as the base, expenditure benefits show a regressive trend, indicating that the poor get relatively more benefits than the rich through government expenditure programs. Like the tax study, when adjusted income is applied, the trend appears to be proportional. The conclusion drawn from this study is that government expenditures also did not substantially affect income distribution in 1963 and 1969. The net fiscal result revealed a proportional burden with respect to adjusted income. The money income base shows a U shaped but regressive trend.

Krongkaew's concept of adjusted income gives a comprehensive measure of the taxpayer's income which is more useful that those of the previous analyses. However, this study still employs very simplified assumptions as to the shifting and incidence of taxes. Moreover, it is conceivable that income classes used in this study represent only the poor, lower-middle, and middle income classes since the income of a family of four in the top income class he categorizes (B 18,000 or 1,500 per month) represents the lowest taxable income bracket in the tax rate schedule.[15] In addition, a careful review of the national income account he utilizes shows that the corporation income tax is not included in disposable income. Since Krongkaew's study does not include this tax in the adjusted income base, a distortion in adjusted income distribution is inevitable.

Objectives and Hypothesis

The objectives of the present study are to explore the tax structure of Thailand in 1969 and 1971 and to measure the burden of various taxes on the poor as well as the rich income classes. To measure the distribution of the tax burden, the study will employ all available evidence, both empirical and theoretical, as well as consideration of institutional settings to support the tax shifting assumptions.

---

[15]According to the 1969 Revenue Code of Thailand, taxpayer is allowed to deduct from gross income by the rate of 20% but not to exceed B 20,000 for employment income; the rates of 15 to 90% are also allowed for income from rent and other sources. Exemptions are given to taxpayer, spouse, and dependent in the amounts of B 4,000, 2,000, and 1,000 respectively. With repect to income from employment, a family of four with annual gross income of B 18,000 will have taxable income of B 6,400.

Within the limits presented by the state of the art of incidence analysis
and the data available, the study will attempt to pinpoint qualitatively
the problems and factors that conceivably may lead to a different
result from that of the conventional measurement (the measurement
that considers only explicit tax collections as the burden to be
distributed among households). In addition, the gressivity of the whole
tax structure, as well as of individual taxes, will be measured numeri-
cally.

The hypothesis of this study is that the existing tax structure of
Thailand in 1969 and 1971 put the heaviest burden on the poor. The
families of middle and higher income classes are assumed to bear rela-
tively lesser tax burdens. If regressivity indeed characterizes the
existing tax structure, taxes have not been an effective instrument
to reduce the extreme inequality of income among the Thai people.

Limitations of the Study

There are two reasons for choosing the years 1969 and 1971. First,
the basic data for 1969 are the most complete and consistent for purposes
of this study. Secondly, all the recent studies reviewed earlier do
not go beyond 1969 because there are no reported data available for more
recent years. However, it is interesting to know how tax burden distri-
bution changed beyond that year, now eight years in the past. To estimate
the tax burden distribution beyond 1969 presently requires an extrapo-
lation of 1969 data. Since 1971 is not too far from 1969, it is likely
that the result of the extrapolation will be reliable.

Another limitation of this study is that in addition to central

government taxes only some of the diverse local government taxes are
included. Non-tax revenues are excluded because they are considered
to be levied on a quid pro quo basis. Since most of the local taxes
are surcharged and shared taxes that are already included in the central
government figures (see Chapter II), only local government taxes that
are in the nature of property taxes are included in this study.

Finally, this analysis will employ so-called "differential
incidence" to measure the tax burden distribution (i.e., to examine
the distributional effects of each tax, while holding public expendi-
tures constant). Even though there are several limitations to this
approach (namely, no examination is made of the effect of the expendi-
ture side of the budget, the effect of taxes on work effort is assumed
neutral, and it is assumed that there are no macro, or output and
employment effects), the differential incidence analysis is commonly
used in public finance research and is generally considered as a
useful and legitimate approach, as well as a feasible method, for
measuring tax burden distribution.

Organization and Scope of the Study

This study consists of five Chapters. Following this introduction,
the second chapter examines Thailand's tax structure in detail. Problems
concerning the direct and indirect tax dichotomy will be pointed out
and the impact of both categories of taxes are investigated. Chapter three
is a qualitative analysis of the measurement of tax burden by income class,
applying methods which other researchers in the public finance field
have applied empirically. Investigation will be made of the possibility

of overestimation or underestimation of the tax burden measurement
through the use of the conventional methodology, due to the omission
of some effects of revenue law that have impacts similar to taxes
even though they do not yield government revenue. Chapter four
presents a quantitative analysis of tax burden in Thailand utilizing
techniques for making numerical measurements of tax gressivity.
Summary and policy recommendations are presented in chapter five,
which includes a proposal for tax reform aimed at making the tax
system of Thailand more equitable.

CHAPTER II

DIRECT AND INDIRECT TAXATION IN THAILAND

Central government revenue of Thailand in 1969 and 1971, the

period selected for this study, consists of taxes, fees, permits, and

revenues from government monopolies and enterprises, as detailed in

Appendix F. One important element of tax incidence analysis is to

decide what government revenues should be included. Generally, the

selection of taxes to be included in the study depends upon the type

of incidence study to be made. For a fiscal incidence study (the

study of both tax and expenditure incidence), all government revenues,

whether in the forms of taxes or fees, should be included to permit

a symmetrical comparison of both sides of the incidence. On the

contrary, if one wishes to investigate only the incidence of taxes,

revenues other than taxes should be excluded because by nature, a tax

is a compulsory levy by the government that differs from fees and

permits, which are considered to be voluntary exchange payments for

obtaining certain privileges (e.g., automobile fees, liquor sales

permits). Therefore, fees and permits are considered to be quid pro

quo payments since benefits received are linked to the payment made.[1]

_____

[1]It should be noted that the distinction between taxes and charges
is not always clear-cut. It could be argued that some taxes are in the
nature of quid pro quo payments. The payroll tax, for example, could
be regarded as a specific benefit taxation since the benfits received
are linked directly to the contribution made. Property taxes have also
been viewed as a payment or charge for services rendered by local govern-
ment. Gasoline or automobile taxes could also be viewed as a charge for
the provision of highway facilities. However, since there is no payroll
tax and the earmarking of tax revenues to specific government expenditure
programs is not practiced in Thailand, those taxes included in the study
are not considered as benefit taxes.

Table II-1

Aggregated Data of Taxes and other Government
Revenues by Type, 1969 and 1971

(Millions of Baht)

Type	1969		1971	
	Amount	Percent	Amount	Percent

I. Taxes included in the study

Personal income tax	1,119.5	7.4	1,403.3	9.0
Property taxes (local taxes)	235.9	1.6	332.6	2.1
Corporation tax	851.1	5.6	955.7	6.1
General sales taxes	3,490.4	23.0	4,059.7	25.9
Selective sales taxes	2,521.0	16.6	3,289.3	21.0
Import duties	5,301.7	34.9	5,189.1	33.1
Rice premium & export duties	1,659.9	10.9	434.6	2.8
Total Taxes	15,179.5	100.0	15,664.3	100.0

II. Government revenues not included in this study

Royalties and permits	628.4		771.9
Gov't service fees	261.7		290.8
Fines and surcharges	83.3		88.4
Motor vehicle fees	241.7		262.4
Gov't monopoly	695.2		751.6
Gov't sales and rent	110.8		172.9
State enterprises	632.8		787.4
Other revenues	859.9		868.6
Tax fines and other fines	69.5		98.8

Total gov't revenues other than tax 3,758.7   4,264.9

Grand Total of Gov't Revenues   18,943.2   19,929.2

Source: Same as Appendix F.

Given this consideration, only government taxes will be included
in this study. Other government revenues namely, fees, permits, govern-
ment monopolies and enterprises are not considered to create a "burden"
and are not included. The aggregated data, showing what taxes are
included and what government revenues are excluded, are presented in
Table II-1. It should be noted that this study includes all central
government taxes as well as some local taxes. The local taxes, house
and land taxes, and land development tax, represent property taxation.
As noted above (p. 13), other local taxes are mainly the surcharged
and shared taxes that are already included in the central government
tax figures. The local tax structure will be discussed in the latter
section of this chapter.

It can be seen from Table II-1 that Taxes included in this study
consist of both direct and indirect taxes. However, even though the
dividing line between direct and indirect taxes is not always clear,
as a matter of convenience, taxes are groupd into direct and indirect
taxes (following most economists' criterion that direct taxes are those
one assumes are not normally shifted). In Thailand, the category of
direct taxes is generally taken to include personal income taxes,
property taxes, and the corporation tax. Indirect taxes, on the other
hand, are taxes which are assumed to be shiftable, either forward or
backward, at some point of transactions. This category generally
includes general sales taxes, selective sales taxes, import duties,
and rice premium and export duties. We will discuss some details of
each tax under these two categories.

A. <u>Direct Taxation</u>

A.1 <u>Personal Income Tax</u>

As shown in Table II-1, the share of personal income tax in the total tax revenues of Thailand in 1971 is only 9%. Obviously, this contribution of total revenues is rather low compared to indirect taxes such as business taxes and import duties. However, the merit of the personal income tax is that it is inherently capable of adjustment to the ability to pay of the taxpayers because the tax levies on income after necessary allowances are excluded (i.e., deductions and exemptions). Moreover, since personal income tax rates are progressive when moving up the income scale, this tax is not only justified on vertical equity grounds, it also is an important tool in economic stabilization of the country.[2]

It might be gained from a closer look into the rate structure of the personal income tax. Before 1951 the standard rate was 8% of income between ฿ 6,000-12,000. A surtax was levied on taxable income in excess of ฿ 12,000 at rates varying from 5% to 40% for different income brackets. In 1951, both the standard and surtax rates were combined into a single rate as shown in Table II-2. Since 1951 the personal income tax rate structure has changed only slightly. The marginal rate for the top income bracket increased from 50% in 1951 to 60% in 1972, for income in excess of ฿ 400,000. Change was also

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[2]Given the overall fiscal and monetary policy, a progressive rate of income taxes will aid in the attainment of economic stability via the revenue elasticity of the taxes (i.e., the percentage change in income tax revenues will be relatively higher or lower than GNP in the periods of economic upswing or downswing respectively).

Table II-2

Marginal Rates and Average Rates of Personal Income Tax:
Thailand, 1951-1977

Taxable Income	1951-1971		1972-1973		1974-1977	
(Thousands of Baht)	Marginal Rate	Average Rate	Marginal Rate	Average Rate	Marginal Rate	Average Rate
0 - 10	10	0	10	0	7	0
10 - 50	13	10.0	13	10.0	10	7.0
50 - 100	16	12.4	16	12.5	15	9.4
100 - 150	20	14.2	20	14.2	20	12.2
150 - 200	25	16.1	25	16.1	25	14.8
200 - 250	30	18.4	30	18.4	30	17.4
250 - 300	35	20.7	35	20.7	35	19.9
300 - 350	40	23.1	40	23.1	40	22.4
350 - 400	45	25.5	45	25.5	45	25.0
400 - 700	50	27.9	50	27.9	50	27.4
700 - 1,000	50	37.3	55	37.3	55	37.1
1,000 and over	50	41.2	60	42.7	60	42.5

Source: Annual Report, Department of Revenue, Ministry of Finance,
(Bangkok, Thailand), 1969-1977.

Note: For the calculation of average rate, see Musgrave, Richard A.
and Musgrave, Peggy B. Public Finance in Theory and Practice,
New York, McGraw-Hill, 1973, table 9-1.

made at the lowest end of the income bracket, when in 1974 the rate

was reduced from 10% to 7% which resulted in a reduction in tax burden,

measured by the reduction in the average rates or a ratio of tax to

taxable income, for all income brackets.

However, it should be noted that average rates are not particularly

meaningful indicators of tax burden distribution since the taxable

income base excludes tax-free incomes (namely deductions and exemptions).

More meaningful indicators are average rates or effective tax rates

expressed as the ratio of tax to adjusted gross income (AGI) shown

in Table II-3. Since the AGI exceeds taxable income by the amount of

tax-free income, the AGI-based rates are lower than the taxable income-

based rates for the corresponding income brackets. This can be seen

when comparing average rates of column 2 in Table II-2 with the last

column of Table II-3. Nevertheless, even though this AGI-base is closer

to the "commonsense" idea of taxpayers' income, the effective tax rates

derived from this narrow income base are still far from perfect in

indicating tax burden distribution and hence the progressivity of tax

structure. This is because there is general agreement among fiscal

economists that an individual's tax capacity should not only include

all sources of income subject to tax (i.e., AGI), but should also

include nontaxable income (i.e., imputed rent, interest on government

bonds, etc.) and unreported income, as well. Effective rates derived

from this comprehensive income base will give a much more meaningful

indication of tax burden distribution and hence the progressivity of

tax structure. This comprehensive income base will be discussed in more

detail in Chapter IV.

Table II-3

Effective Tax Rates and Distribution of Personal Income Tax Base, 1969

(Thousands of Baht)

Taxable		Number of Returns		AGI		Tax		Effective Tax Rate (Percent)
		Amount	Percent	Amount	Percent	Amount	Percent	
Less than	10	669.90	77.3	7,212,2	41.5	126.3	11.3	1.8
10 -	50	159.55	18.4	4,942.9	28.5	279.2	25.0	5.6
50 -	100	22.96	2.6	1,953.1	11.3	145.5	13.0	7.4
100 -	150	6.29	0.7	846.6	4.9	80.7	7.2	9.5
150 -	200	2.86	0.3	500.6	2.9	60.2	5.4	12.0
200 -	250	1.65	0.2	349.8	2.0	50.6	4.5	14.5
250 -	300	0.90	0.1	238.0	1.4	37.9	3.4	15.9
300 -	350	0.58	0.1	199.6	1.2	32.8	2.9	16.4
350 -	400	0.39	0.1	125.9	0.7	28.1	2.5	22.3
400 -	500	0.52	0.1	224.5	1.3	50.9	4.5	22.7
500 -	1,000	0.69	0.1	456.8	2.6	119.2	10.7	26.1
1,000 -	2,000	0.19	0.0	249.9	1.4	83.8	7.5	33.5
Less than	3,000	0.03	0.0	51.6	0.3	23.6	2.1	45.7
Total		866.51	100.0	17,351.5	100.0	1,118.8	100.0	6.4

Source: Annual Report, Department of Revenue, Ministry of Finance,
(Bangkok, Thailand), 1969.

Note: Effective Tax rate = Tax / AGI.

Table II-4

Percentage Distribution of Personal Income Tax Base by Type of Income, 1969

Taxable Income (Thousands of Baht)	Wages & Salaries	Dividends, Profits, Interests, and Rent	Business, Professionals, and Traders	Other
0 - 10	5.6	0.4	13.7	5.3
10 - 20	12.4	2.0	10.2	8.6
20 - 30	9.4	2.6	7.8	6.2
30 - 40	7.2	2.7	5.7	6.0
40 - 50	5.9	2.9	4.5	1.3
50 - 100	16.7	13.1	14.9	18.0
100 - 200	14.1	17.5	13.4	27.3
200 - 300	9.5	12.0	7.0	16.8
300 - 400	5.9	8.0	5.3	0.0
400 - 500	4.0	8.7	5.2	0.0
500 - 1,000	7.9	16.6	4.0	11.7
1,000 - 2,000	1.1	6.3	5.4	0.0
2,000 - 3,000	0.0	5.2	2.9	0.0
3,000 and over	0.3	2.1	0.0	0.0
Total	100.0	100.0	100.0	100.0

As Percentage of total

78	10	11	1

Source: Department of Revenue, Ministry of Finance, Thailand.
(Unpublished data).

Table II-3 discloses that about 36% of personal income tax revenue came from those 95% of taxpayers whose taxable income was less than ฿ 50,000, while 20% came from the 0.1% top taxpayers whose income exceeded ฿ 1,000,000. The rest, or 44% of the personal income tax revenues, came from about 4.9% in the middle and upper-middle income brackets. Evidently, such a rate structure imposed on this income distribution seems to limit the amount of revenues collectible from this source, given the level of exemption and deductions. This is because the number of the rich, upper-middle, and middle income households combined is only 5%, even though their contribution is 64% of total personal income tax revenues.

As to the distribution of the tax base, the bottom of Table II-4 reveals that the bulk of personal income tax revenues comes from wages and salaries which accounted for 78% of total personal income in 1969. Capital income (i.e., dividends, profits etc.) accounts for only 10%. The high percentage of wages and salaries might be partly explained by the fact that this income is subject to tax withholding. Since capital income, which is more concentrated in the middle and rich income classes, is not subject to tax withholding, this source of income is likely to evade tax by way of bribing tax assessors or simply failing to report it.

A.2 Corporation Tax

Like the personal income tax, the corporation tax in Thailand is a relatively unimportant source of revenue. In 1971, the corporation tax, on the average, accounted for only 6.1% of total tax revenues.

However, because its rate is graduated and because allowances are made

for company or corporate expenses and dedcutions, the corporation tax

also is important on the equity point of view.

A modern corporation tax in Thailand was first imposed in 1951

with the tax imposed on net profits at different rates depending on

the level of earnings. The rates of the corporation tax in 1969 are

shown below:

Net Profit	Tax Rate
(Baht)	(%)
Less than 500,000	15
Over 500,000 to 1,000,000	20
Over 1,000,000	25

In 1951 with the same level of net profit above the rates were

10, 15 and 20%. From 1959 to 1971, the rates were 15, 20 and 25%.

The 1972 tax rates that were still applicable in 1977 were 20, 25 and

30%. The structure of the corporation tax base is shown in Table

II-5. Corporations in Thailand are broadly grouped into seven activities.

It is apparent that ranked by total assets, the largest corporations

are in commerce, banking, insurance, real estate, and manufacturing

respectively. Considering the number of returns, about half of the

corporation tax is in commerce. More than 70% of the returns are filed

by the largest corporations with assets more than 22.4 millions of

baht, and their contribution on tax revenues is nearly 73% of the total.

At the lower scale of assets, less than 30% of the returns, with assets

less than 5.6 millions of baht, contributed about 27% to the total

corporation tax revenues. This situation implies that the importance

Table II-5

Corporation Tax by Activities and Size of Assets, 1969.

Activities	Size of Total Assets (Millions of Baht)	Returns		Net Profits		Tax	
		Numbers	Percent	Millions of Baht	Percent	Millions of Baht	Percent
1. Agriculture and Others	Less than 1	285	1.5	45.4	1.7	9.7	1.6
2. Mining and Social Service	3.1	1,424	7.4	42.3	1.5	41.2	6.7
3. Construction	4.7	1,700	8.8	158.4	5.8	29.4	4.8
4. Services	5.6	2,199	11.4	252.6	9.2	54.2	8.8
5. Manufacturing	22.4	3,441	17.8	945.6	34.5	211.9	34.4
6. Banking, Insurance, Real Estate	30.7	539	2.8	327.5	11.9	76.4	12.4
7. Commerce	33.0	9,782	50.5	972.8	35.4	193.6	31.4
Total		19,370	100.0	2,744.6	100.0	616.4	100.0

Source: Derived from Revenue Department, Ministry of Finance (Unpublished data).

of the size of corporation with respect to revenue contribution is more or less proportional i.e., both large and small corporations pay to the government an income tax roughly proportional to their respective net profits.

However, tax on net profits covers both distributed and undistributed profits. By its very nature, this double taxation might encourage corporations to increase their retained earnings. At first glance, this might seem desirable if all retained profits are reinvested in the corporation or in the capital market, thereby encouraging expansion of investment. But since the capital market is still underdeveloped and capital gains are exempted from taxation in Thailand, part of the retained profit probably will be invested for corporations' expansion, while another part is likely to be invested in buying real estate and holding it for speculation.

A.3 <u>Property taxes</u>

Property taxes are an unimportant element in the tax structure of Thailand and will remain so as long as the ruling classes and wealthy Thai elite are not willing to assume additional tax burdens. This attitude will not only keep the level of property tax collection low but will also make adoption of an inheritance tax impossible in Thailand.

In an attempt to include property taxes in the scope of their analysis (lacking data on collections by income class), recent studies of tax incidence of Thailand -- cited above at pp. 6-7 -- have employed the automobile registration fee and immovable property fee as a proxy for property taxes. These two fees are more in the nature of <u>quid</u> <u>pro quo</u> payments than taxes, since they are directly related to the

Table II-6

Structure of Revenues Collected by Local Authorities, 1969

(Millions of Baht)

Type of Revenue	Amount	Percentage
I. Grants and Subsidies from Central Gov't	572.4	36.4
II. Shared with Central Gov't	172.9	11.0
Vehicle registration fee	164.1	10.4
Rice export tax	8.8	0.6
III. Surcharged on National Taxes	381.6	24.3
Business taxes	314.5	20.0
Entertainment tax	8.0	0.6
Liquor and non-alcoholic beverage tax	57.4	3.6
Commodity (sale) tax	1.7	0.1
IV. Locally Levied Taxes	283.9	18.0
House and land tax	129.2	8.2
Land development tax	106.7	6.8
Signboard tax	27.4	1.7
Sloughtering tax	20.6	1.3
V. License Fees and Fines	57.4	3.6
VI. Public Utility Revenue	2.9	0.2
VII. Property Revenue	55.5	3.5
VIII. Other Revenues	47.3	3.0
Total	1,573.9	100.0

Source: Compiled from Unpublished data, Ministry of Interior, Thailand.

benefits received by those making payment. Since the present
study focueses only on tax burden distribution, these two fees, like
other fees, will not be used for property taxes or otherwise included
in this study. However, some taxes levied by local authorities which
more appropriately represent property taxes for Thailand are included.
These are the house and land tax, and the land development tax, whose
place in local finance is shown in Table II-6.

It is clear from Table II-6, that local authorities in Thailand
are substantially dependent on grants and subsidies from the central
government to finance their administration. They accounted for 36%
of the total revenues of the local authorities in 1969. Other major
sources of their revenues are the surcharged and shared taxes, taxes
that are levied by the central government and given to or shared with
local authorities. Taxes levied by local authorities are the house
and land tax, and the land development tax mentioned above; these
accounted for 15% of local revenues. The amount of surcharged and
shared taxes are included in central government taxes.

The house and land tax in Thailand is based on the annual rental
income by reference to the rent of similar houses and buildings in the
same neighborhood. This tax base is likely to understate true earning
from houses and buildings since it does not include a large amount of
lump sum money payments made by tenants to landlords when the lease
agreements are made.[3] With respect to the land development tax, rates
are very low and sharply regress at the upper end of the scale of land

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[3]For more detailed, see p. 78.

value. They vary from 0.25 percent for land valued at 200 baht per rai,
to 0.55 percent for land valued at 10,000 baht per rai, and then decline
to less than 0.10 percent for land valued in excess of 500,000
baht per rai. Since most real property is held by middle and high
income people, it is apparent that the incorporation of the advance
lump sum payment in the house and land tax base, coupled with a graduated
rate for the land development tax, would raise revenues of the Thai
government greatly.

B. Indirect Taxation

Like most underdeveloped countries, Thailand relies heavily on
indirect tax revenues. As shown in Table II-1, among direct taxes
included in this study are general sales taxes (business and stamp
taxes), selective sales or excise taxes, import duties, and rice premium
and export duties. In 1971, these taxes accounted from about 80% and
65% of total taxes and total government revenues, respectively. These
major revenue producers, especially general sales taxes and import
duties, deserve a conspicuous setting in tax incidence analysis.
Some details of each tax will be examined under separate headings.

B.1 Business Tax[4]

The business tax was first introduced in 1933 under the Business
Tax Act. The tax was levied on the basis of rental value, horse power of
machinery, or number of employees. In 1953, this multiple tax base was
changed to a single gross sales base and businesses subject to taxation

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[4]A more detailed study of the business tax can be found in Lewcha-
lermwong, Anun. Taxation and Tax Reform in Thailand (Kurusapha
Ludprao Press, Bangkok, 1972).

were categorized into twenty-three types, with one percentage rate for most business. In addition, commodities, either produced at home or imported, were subject to business tax. The tax base for imported commodities is c.i.f. value plus tariff plus a standard profit (standard profit rates is issued by the Ministry of Finance). For domestic production, the business tax is based upon the above gross sales. In the calculation of the business tax, a flate rate of 10% for the municipal tax is automatically added.

From 1961 up to the present, the business tax in Thailand has been reduced to twelve categories with the rates differing according to the type of business, as shown in Table II-7. From second to twelve categories of the tax, the rates do not significantly differ except for restaurant and banking businesses. A wide range of business tax rates is found in the first category. As shown in Appendix A, the rates range mostly from 1.5 percent for raw materials and simply processed foods, to 7 percent for intermediate and finished products. Household appliances, whiskey and passenger cars are taxed at the high rates of 15.5 for the former and 30 percent for the latter two. It should be noted from Appendix A that business tax rates on locally produced goods are exempted from business tax. However, since the business tax is applied to all stages of production at home, the cascade or pyramiding effect of the tax may be quite costly to domestic producers as compared to importers of finished goods. In addition, the cascade effect of the business tax may enccurage domestic producers to apply vertical integration to both production and distribution, which seems inequitable to unintegrated producers who have to pay more tax. Moreover,

Table II-7

Business Tax Rates, 1971.

Type	Tax (Percent)
1. Commodities sales	1.5 - 30
2. Rice and saw milling	3.5 and 4
3. Contractor	2 - 5
4. Rental services	2.5
5. Warehouse	2.5
6. Hotels and Restaurants	2 and 10
7. Transportation services	0.5
8. Pawnshops	2.5
9. Brokers and auctioneers	5.5
10. Real estate enterprises	3.5
11. Banking	2.5 - 10.5
12. Insurance	2.5 - 3

Source: Annual Report, Department of Revenue, Ministry of Finance
(Bangkok, Thailand), 1971.

integrated producers might end up wasting resources, resulting from
lack of specialization. It is therefore conceivable that the business
tax on imports burdens consumers of both imported as well as domestic
products. This is because the business tax on imports adds its cost
in addition to import duties, which will be reflected in higher prices
for imports. With respect to domestic product prices, observation in
Thailand has shown that most domestic product prices are close to and
presumably set by the import prices. It is conceivable that consumers
have to pay higher prices for both domestic and imported commodities.
The types and amounts of revenues from the business tax are shown in
Appendix F. It should be noted that about fifty percent of business
tax revenues came from the business tax on imports. This part of the
tax is likely to produce an effect similar to the import duties.

B.2 <u>Selective Sales Taxes</u>

As revenue producer, excise taxes are the third largest source
after import duties and the general sales or business tax; they contri-
buted about 21% to the toal tax revenues in 1971 (Table II-1). Among
the products that contribute most are petroleum, tobacco, and alcoholic
beverages, which together accounted for about 83% of total revenues
from excise taxes in 1971 (see Appendix F).

Selective sales taxes in Thailand are all national excises, excpet
the entertainment tax which is a surcharged tax. Excise taxes are
imposed on both domestic and imported products, except for imported
petroleum products, cement and matches. The rates of excise taxes are
in specific rates except domestic cigarettes which is in ad valorem.

The specific rates have been converted into ad valorem rates as

Table II-8

Thailand: Excise Tax Rates, 1971 (Ad valorem)

Commodities	On imports (Percent of c.i.f.)	On domestic products (Percent of sales)
Petroleum products		
Gasoline	–	36.5
Kerosene	–	26.1
Diesel	–	17.8
Residual fuel oil	–	16.6
Jet fuel	–	27.5
Tobacco products		
Cigarettes	127.9	30.0
Cigars	64.8	n.a.
Alcoholic beverages		
Beer	81.8	35.0
Whiskey	8.2	15.1
Non-alcoholic beverages		
Soff drinks	23.3	23.3
Others		
Cement	–	5.0
Matches	–	24.1

Source: Same as Appendix A.

indicated in Table II-8. It is shown that for imports, the rates in percentage of c.i.f. value range from 8.2 percent for whiskey to 127.9 percent for cigarettes. The rates for domestic products range from 5.0 percent for cement, to 36.5 percent for gasoline. We see that most excise taxes rates for domestic products are lower than those of imports, the differential affecting the degree of protection to domestic industries. The excise taxes in Thailand are collected at manufacturing and wholesale sources to reduce the difficulty of administration and to minimize tax evasion. Moreover, this tends to make the tax a single-stage tax reducing the problems of tax cascading which prevail in the business tax, as already noted.

B.3 Import Duties

Import duties date back to 1855 when Thailand committed herself to a trade treaty with some foreign countries. After a long attempt to revise the trade treaty, Thailand was freed from the commitment in 1920 and a modern Custom Tariff Act was enacted in 1926.

Initially, import duties were solely for revenue purposes. Changes were made in 1953 to use import duties as a tool for encouraging domestic industries by discriminating rates in favor of raw materials for domestic production. Industrial promotion policies were enunciated in the 1954 and Industrial Promotion Act and the Board of Investment was established in 1960 to implement those policies. The 1954 Act aimed at attracting foreign investment by providing tax incentives, tariff protection, certain privilges, and a guarantee of safety from takeover by and competition from the government.

Since 1960, industrial policy in Thailand seems to emphasize import

substitution. The effect of import substitution on Thailand and the aspect of excess burden created by this policy will be further discussed in the next chapter.

Import duties are the largest source of revenues -- more than 25% of the total revenues and more than 33% of the total taxes collected in 1971 (see Table II-1). The rates of import duties are either specific or ad valorem rates, or both. The specific rates have been converted into ad valorem rates as shown in Appendix B. It is noticeable that import duties of Thailand in 1971 were heaviest on consumer goods, especially for some fruits and alcoholic beverages; the rates range from more than one hundred percent to more than one thousand percent. Rates were generally lower for intermediate goods, transportation equipment, construction materials, and machinery. If consideration is made of individual items of imports, it may be noted that the higher rates of import duties are for those goods which are considered luxuries, and the lower rates are for those necessity. Ideally, tax incidence analysis for the major taxes of Thailand, such as business tax on imports and import duties, needs a classification of luxury and necessity goods for an accurate allocation of these taxes among the different income classes. However, due to conceptual problems, the data classification as to "luxury" and "necessity" can not be made without clear-cut concepts of the two categories. Therefore, in this study, no effort will be made for the classification of luxury and necessity goods. However, since the above taxes are classified into consumption and producers' goods, this classification will be useful in consideration of shifting assumption of the taxes. The types and revenues from import duties are shown in

Appendix F.

B.4 Export Duties

Export duties of Thailand may be thought of as a by-product of
World War II. At the end of the war, Thailand was forced to sign a
treaty with Great Britain and the United States. The treaty was
essentially a war reparation contribution that Thailand had to ship
600,000 tons of rice to the United Nations by 1947. The price for
the rice was £20 sterling per ton with an allowance for the Thai
government to impose the first export tax at £4 sterling per ton of
rice shipment.[5]

After the commitment was met, Thailand continued to monopolize
rice export through its Rice Bureau, aiming at revenue for the national
government. It was not until 1948 that rice was shipped abroad by
private exporters.

In addition to the export tax for rice, a special tax called
a "rice premium" must be paid by rice exporters. This premium is levied
on the grounds that there is a sizable difference between the domestic
and world prices of rice, and thus the premium is levied to compensate
for the loss of government revenue due to the abolition of the govern-
ment monopoly of rice exported. In fact, this rice premium should
be considered as part of the export tax for rice and it should be
incorporated into the export duties for rice. The rates of the rice
export tax and premium vary in accordance with the quality of rice.

By 1971, a few other products were being exported. The revenue

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[5]For more detailed, see Lewchalermwong, Anan. op. cit., pp. 69-112.

from export duties is not quantitatively important, as it accounted for only about 2% of total government revenues in 1971 (see Table II-1 and Appendix F). Since export duties are applied only to agricultural products, while manufacturing products are not subject to tax, this measure seems to discriminate against agricultural exports and might be considered as an inequitable policy.

CHAPTER III

QUALITATIVE ANALYSIS OF TAX INCIDENCE STUDIES

III. 1 Conventional Tax Incidence Analysis

Tax incidence analysis, according to Luc De Wulf,[1] can be classi-
fied into two approahces: formal incidence and effective incidence.
The former approach was mostly used in an early study of Indian tax
incidence. This type of study measures the burden of the tax that
falls on people as it is seemingly intended by the legislator, i.e.,
direct taxes are taken as not shifted while indirect taxes are fully
shifted forward. The effecitve incidence approach which has been
used in studies of taxation in the United States, Latin American, and
some Asian countries, accepts the possibility that the burden of all
taxes may be shifted regardless of where the government intends the
burden to rest. Burden distribution of taxes is estimated after
analysing the shifting of each tax. It is apparent that the effective
incidence approach is closer to reality than the formal incidence
approach,

Generally, in the analysis of effective incidence, measurement of
the tax burden by income class is likely to follow the following procedure.
First, money income distribution for various income classes must be
available as the income base (AGI gase or its equivalent) for computing
an effective tax rate. Second, some or all government revenues are
selected for analysis. Third, income by income classes is defined

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[1]Luc De Wulf, "Fiscal Incidence Studies in Developing Countries:
Survey and Critique," IMF Staff Papers, Vol. 22 (March, 1975).

and selected, since different income bases will give different results.

Fourth, a series of assumptions regarding the shifting of each tax

is made according to empirical evidence or observed economics behavior

in relation to the taxes. Finally, the method of allocating each tax

to each income class is described, and the mathematical device for

measuring the tax burden demonstrated.

Given certain assumption as to the degree and direction of tax

shifting, the incidence of all types of taxes can be computed. Taxes

may be shifted forward or backward, stay put, or there may be a combina-

tion of these possibilities. In any case, a mathematical model can

be constructed to show how effective tax rates, the indicator of tax

burden, are derived. Three general mathematical models of tax burden

computation are used in this study as shown below. However, if we

assume that a tax partly stays put, partly shifted forward, and partly

backward, each part of this tax must be calculated along with that

corresponding model and then summed up for the total distribution of

that tax.

A. Stays-put Assumption Model[2]

When the initial burden of a tax is the same as the final burden,

the effect may be called "stays put", or not shifted. Such a tax

affects only those on whom the tax is directly imposed. The mathematical

model for this assumption is shown on the following page.

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[2]The term "Stays put" was used in Musgrave, Richard A. and Musgrave, Peggy B. Public Finance in Theory and Practice (New York: McGraw-Hill, 1973), p. 367.

Let R_{ph} = effective rate of tax burden as a percentage of adjusted gross income of pth tax at h^{th} income class.

t_{ph} = total amount of tax from p^{th} tax at h^{th} income class

Y_h = total adjusted gross income of households at h^{th} income class.

Y = $\sum_h Y_h$

T_p = total tax collection from p^{th} tax of all income classes.

R_p = effective rate of tax burden of all income classes

Thus Σt_{ph} = T_p

and R_{ph} = $(100) \, t_{ph} / Y_h$

Then R_p = $(100) \, \Sigma t_{ph} / \Sigma_h Y_h$

= $(100) \, T_p / Y$

B. Forward Shifting Assumption Model

The forward shifting of a tax affects the uses sides of taxpayers' account via higher prices of commodities which are taxed. Therefore, any tax assumed to be forward-shifted must be a tax on consumption; the allocation of the tax burden must be on the expenditure of the household.

Let T_{ij} = total tax collection from i^{th} tax on j^{th} taxable item of all income classes.

t_{ijh} = total inputed taxes paid by households from i^{th} tax on j^{th} taxable item at h^{th} income class.

E_{jh} = expenditure of households on j^{th} taxable item at h^{th} income class.

E_j = total expenditure on j^{th} taxable item of all income classes.

Then we have $\Sigma t_{ijh} = T_{ij}$

and $\Sigma E_{jh} = E_j$

Next let r_{ij} = the rate of ith tax on j^{th} taxable item.

Also E_{jh} / E_j = the ratio of household expenditures on j^{th} taxable item by h^{th} income class to the total expenditure on j^{th} taxable item of all income classes.

Then we have $r_{ij} = T_{ij} / E_j$

And the imputed taxes paid by households from i^{th} tax on j^{th} taxable item a hth income class, apart from shifting is

$$r_{ij}E_{jh} \tag{b.1}$$

Substituting the value of r_{ij} we get

$$T_{ij}(E_{jh} / E_j) \tag{b.2}$$

Next let S_{ij} = percentage of shifting of ith tax on j^{th} taxable item where $0 \leq s$ (b.3)

From (b.1), (b.2), and (b.3) we have

$$t_{ijh} = (T_{ij} S_{ij}) (E_{jh} / E_j)$$

Next let R_{ijh} = effective rate of tax burden paid as a percentage of adjusted gross income with respect to i^{th} tax on j^{th} taxable item at h^{th} income class.

Y_h = total adjusted gross income of households at h^{th} income class.

and $\quad Y \quad = \quad \Sigma_h \, Y_h$

Then we get $\quad R_{ijh} \quad = \quad (100) t_{ijh} \, / \, Y_h$

and $\quad R_{ij} \quad = \quad (100) \Sigma t_{ijh} \, / \, Y_h \quad = \quad (100) \, T_{ij} \, / \, Y$

C. Backward Shifting Assumption Model

The backward shifting of taxes, when it exists, affects the sources side of taxpayer's accounts. Assuming that there is no adjustment for work effort after the tax is imposed.[3] the sole effect of backward shifting of tax is to reduce income received by owners of inputs (i.e., workers, land owners etc.). In this case the tax burden must be allocated according to income distribution of those inputs.

Logically, if forward shifting of the tax is allocated according to buyer (consumer) expenditures, backward shifting of the tax can be allocated according to the seller's activities (i.e., in the case of labor, it is the sale of productive services; in case of farmers, it is the sale of products). Granted this reasoning, the formula for backward shifting of taxes can be formed similarly to that of forward shifting.

Let $\quad D_{ij} \quad =$ total collection from $i\underline{\text{th}}$ tax on $j\underline{\text{th}}$ taxable item (service) of all income classes.

$\quad d_{ijh} \quad =$ total imputed taxes paid by households from $i\underline{\text{th}}$ tax on $j\underline{\text{th}}$ taxable item (service) at $h\underline{\text{th}}$ income class.

$\quad F_{jh} \quad =$ total sales of $j\underline{\text{th}}$ taxable item (service) at $h\underline{\text{th}}$ income class.

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[3]See Marvin Kosters, "Effect of an Income Tax on Labor Supply," in A.D. Harberger and M.J. Bailey, editors, The Taxation of Income from Capital (Washington, D.C.; Brookings Institute, 1969).

F_j = total sales of $j\underline{th}$ taxable item (Activity) of all income classes.

Then we have $\Sigma d_{ijh} = D_{ij}$

and $\Sigma F_{jh} = F_j$

Let r_{ij} = the rate of $i\underline{th}$ tax on $j\underline{th}$ taxable item (service).

Also F_{jh} / F_j = the rate of household selling $j\underline{th}$ taxable item (service) by $h\underline{th}$ income class to the total sales of $j\underline{th}$ taxable item (service) of all income classes.

Then we have $r_{ij} = D_{ij} / F_j$

and the imputed tax paid by household from $i\underline{th}$ tax on $j\underline{th}$ taxable item (service) at $h\underline{th}$ income class, apart from shifting, is

$$r_{ij} \, F_{jh} \qquad \text{(c.1)}$$

Substituting the value of r_{ij} we get

$$D_{ij}(F_{jh} / F_j) \qquad \text{(c.2)}$$

Next let S_{ij} = percentage of shifting of $i\underline{th}$ tax on $j\underline{th}$ taxable item (service) where $0 \leq S$ (c.3)

From (c.1), (c.2), and (c.3) we get

$$d_{ijh} = (D_{ijh} S_{ij})(F_{jh} / F_j) \qquad \text{(c.4)}$$

The effective rate of tax burden in this case will be

$$R_{ijh} = (100) \, d_{ijh} / Y_h$$

$$R_{ij} = (100) \Sigma d_{ijh} / \Sigma_h Y_h$$

$$= (100) \, D_{ij} / Y$$

III. 2 Implicit Tax Incidence Analysis

Empirical study of tax incidence that follows the conventional

procedure mentioned previously is not difficult to perform as long as the necessary data are available. The resulting effective tax rate for each tax is the indicator of the tax burden that falls on each income class, for that levy. We might call such a burden an "explicit tax burden", the burden resulting from the transfer of resources from the private sector to the public sector when a tax is imposed.

However, many economists have recognized that the effect of taxes upon the burden of the households might go beyond the actual revenue received by the government. Under certain conditions, an imposition of tax may introduce a so-called "efficiency cost" or "excess burden" to households when the tax distorts economic decisions (consumer choice) of the households which leads to a total tax burden exceeding the amount of revenue collected.[4] Another related cost which can also be considered excess burdens are tax administration costs and taxpayers' compliance cost. Obviously, the more complex the tax, the higher these two costs and hence the greater the tax burden.

It is clear from section III.1 of this chapter that the conventional measurement of tax burden employs only the actual amount of tax revenue as the numerator for estimating tax burden distribution. This method of measurement cannot gauge the real burden distribution of taxes since the excess burden of taxes is not included. The reason for not taking into account the excess burden of taxes might be that the excess burden of the taxes is hard to measure, or because its distributive effect is

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[4]Musgrave, Richard A. and Musgrave, Peggy B. Public Finance in Theory and Practice (New York: McGraw-Hill, 1973), Chapter 20.

considered useful only on the theoretical level. Whatever the reason, the aspect of excess burden of taxes has been completely neglected or bypassed, in most tax incidence analyses, even though it seems to be accepted that taxes can create excess burden. Since the inclusion of the excess burden of the taxes is likely to effect the result of conventional measurement of tax burden, we may call the distributional effect of excess burden the "implicit tax burden" (a burden that, unrecognized, will cause the burden distribution of taxes to differ from the conventional measurement). There may be a number of cases that will result in an excess tax burden, but this study will focus its attention only on the effects of tax evasion and import substitution on the burden distribution of taxes because these two effects seem to be prominent characteristics of most developing countries, including Thailand. Including these two effects into the conventional measurement of tax burden distribution shows up what would be an overestimation or underestimation of the tax burden for some income classes. We will discuss these two effects and their impact on the conventional tax burden measurement in some detail, but for want of data, with little quantification.

The Effect of Tax Evasion

Tax evasion includes the intentional evasion of taxes as well as the failure to comply with the tax law due to ignorance, error, or misunderstanding. The result may be to completely escape tax payment (complete evasion) or to reduce liabilities (partial evasion); and the

success of tax evasion is, of course, a loss to the government.[5]

Tax evasion may be said to be rooted on both the taxpayers' side
and the tax administration side. Most taxpayers have tax morals or
tax consciousness to a certain extent, but in a situation where tax
evasion is widely practiced among the members of society, even tax-
payers who regard themselves as honest may follow that practice,
perhaps because of resentment at bearing a tax burden which the other
evaders should share. Other factors that might contribute to tax
evasion on the part of taxpayers are general beliefs that tax admini-
stration is very inefficient and inactive to the extent that the prob-
ability of being caught is quite low, and the authorities are lenient
in applying penalties for tax evasion. These beliefs inevitably lead
to pervasive tax evasion.

Apart from the inefficiency and inactiveness of tax administra-
tors, tax evasion may be intensified by the readiness of tax officers
to accept bribes in return for illegal services rendered. It is in the
interest of tax evaders to pay less than the total sum of money that
should be legally paid and part of this "saving" goes into the pocket
of tax officers as a reward for their collusion. It is generally
believed that tax assessors, tax inspectors, tax collectors and tax
auditors in most underdeveloped countries accept bribes to a consider-
able extent. This is quite a serious problem which is difficult to
overcome as long as the wages and salaries of tax officers remain low.

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[5]It should be noted that tax evasion differs from tax avoidance in
that tax avoiders use lawful methods rather than violating the law, as
in case of tax evasion.

Table III

Tax Evasion Found and Charged in Thailand 1969

(millions of Baht)

Types of Tax Evasion	Civil Cases		Criminal Cases		Percentage of Total	
	Number	Amount of Tax Evasion	Number	Fines	Number	Amount of Tax Evasion
	(1)	(2)	(3)	(4)	(1)+(3)	(2)
Found by Central Authority						
Personal Income Tax	9,318	29.3	2,688	0.248	12.5	18.3
Corporation Tax	1,026	52.9	29	0.005	1.1	33.0
Business Tax	7,294	67.1	6,586	0.717	14.5	41.8
Stampt Tax	1,530	0.9	185	0.021	1.8	0.6
Entertainment Tax	67,076	3.2	14	0.005	70.1	2.0
Found by Local Authorities						
Business Tax and Entertainment Tax	–	7.0	–	–	–	4.3
Total	86,244	160.4	9,502	0.996	100.0	100.0

Source: Annual Report, Revenue Department, Ministry of Finance (Bangkok, Thailand), 1969.

Note: Personal Income Tax evasion as the percentage of total personal income tax————2.6%
Corporation tax evasion as the percentage of total corporation tax——————6.2%
Business tax evasion as the percentage of total business tax————————2.0%
Total tax evasion as the percentage of total taxes————————————1.1%

In the case of Thailand, the widespread practice of tax evasion
is beyond question. Table III indicates the cases of tax evasion
reported by both central and local authorities. The statistics in
1969 shows that the entertainment tax is first in terms of the number
of cases found, but the monetary amount of tax evasion is only 2%
of the total amount of tax evasion found by authorities. The tax
with the largest amount of evasion is the business tax which accounts
for more than 40% of the total amount of taxes reported to be evaded,
and nearly 15% of the total number of tax evaders. The high percentage
of tax evasion among business is due to the fact that the majority
of businesses keep two sets of books and records, one for themselves
and the other for the tax inspector. Undoubtedly, the amount of income
reported on the books for the tax inspector is far less than actual
income, perhaps less than a half. The second largest amount of tax
evasion discovered is shown for the corporation tax with accounts
for 33% of the total amount of tax evasion found and 1% of the total
amount of tax evaders. Most corporations are believed to under-report
their receipts since it is easy for them to bribe tax auditors. The
third largest amount of tax evasion found is the personal income tax,
which accounts for 18% of the total tax evasion discovered and 12% of
the number of tax evaders. Tax evasion under the individual income
tax is believed to occur mostly among self-employed and professional
men, namely, lawyers, accountants, doctors, and architects. Because
most of income received by these people is paid in cash and is not
subject to tax withholding, it is difficult to assess their actual
income accurately, due to lack of evidence, such as bank transactions.

Table III also reveals that income tax evasion (personal and corporation taxes) constituted nearly 9% of total income taxes collected and business tax evasion accounted for 2.0% of the total business tax collected in 1969. Overall, the total amount of taxes evaded was 1% of the total tax revenues in 1969.

The statistics reported in Table III verify the existence and extent of tax evasion and show it is a serious problem. In fact, it is quite possible that the actual amount of tax evasion is far greater than reported.[6] But strangely enough, this problem does not receive much attention or condemnation in Thailand. There are several reasons that might explain this. First, the farmers who constitute the bulk of the population in Thailand are exempted from income tax liability; this huge group of people preseumably considers taxes not to be of their concern. Second, it might not be an exaggeration to assume that most taxpayers (except those taxpayers who are subject to tax withholding) evade taxes when the opportunity is open to them. If this assumption is valid, it would imply that tax morality and tax consciousness among the Thai people are low, to the extent that tax evasion is a socially acceptable practice.

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[6]Even though it is difficult to estimate the overall extent of tax evasion, one speculation as to the amount of tax evasion with respect to international trade can be traced by looking at the "errors and ommissions" item in the balance of payments account of Thailand. It is reported that the errors and ommissions amounted to 502 and 1,581 millions of baht in 1969 and 1971 respectively. Since smuggling-in and smuggling-out are pervasive at the southern border of Thailand, the amount of smuggling will not be shown in import and export transactions, but the international monetary transfers will be included in bank accounts and thereby reflected in "errors and ommisions" shown in the balance of payments account. Therefore, it is reasonable to assert that part of income shown as errors and omissions in the balance of payments account is income that evaded taxation.

A study of the tax revenue code of Thailand indicates that Thailand has sufficient laws to cover all aspects of evasion and provides numerous penalities for both civil and criminal offences. Yet rarely is a prominent businessman or a millionaire publicly charged with or imprisoned for tax evasion. It is only the small businessman and the poor who cannot afford to bribe tax officers who are penalized. As long as this situation prevails in Thailand, it will be difficult for the tax revenue department to succeed in controlling evasion, despite the existance of a penalty of a maximum term of seven years' imprisonment for criminal tax evasion.

Having considered the causes of tax evasion, the next question is how evasion affects the burden distribution of taxes in the conventional tax burden measurement. Perhaps, tax evasion can affect conventional tax burden distribution in two ways. First, if it were possible to estimate the amount of tax evasion for each income class, this amount of tax evasion could be included in the actual amount of taxes collected by the government and be used as the numerator in calculating the potential effective tax rates. Since the amount of tax evasion is likely to concentrate more on the higher income classes, the result will be relatively higher effective tax rate for higher income classes compared to conventional effective tax rates. It is conceivable that this hypothetical method of tax burden measurement will not only show how much the revenues of the government are lost, it also can be used as the hypothetical real tax burden distribution that would result from the imposition of taxes. However, since this undiscovered amount of tax evasion is not paid to the government, this

amount of tax cannot be said to be the burden of households and is
not considered as an implicit tax burden of households.

Second, the amount of money given to tax officers as bribes are
a burden of households who pay them and can be considered an implicit
tax burden as defined earlier. If this amount of bribe money were to
be added to actual government revenues, the result of effective tax
rates would differ from the conventional effective tax rates -- the
difference depending upon the assumptions made as to how bribe money
is distributed among the households in various income classes. If
we assume that the equal amount of bribe money is distributed among
households in various income classes, which is very unlikely, the
effective tax rates for all households will increase proportionally
in relation to the conventional effective tax rates. On the other
hand, if we assume that the higher the income class, the larger
the relative amount of money spent for bribes, the effective
tax rates will be increased for all income classes comparing
to the conventional effective tax rates, but the higher income
classes' effective tax rates will be increased more than the lower
income classes.

It is, therefore, clear that the amount of bribe money is an
implicit tax burden to the households and if added to actual amount
of tax paid to the government would give a different pattern of
tax burden distribution compared to the conventional tax burden
measurement. Unfortunately it is not possible to estimate accurately
the amount of bribe money that goes into the pockets of tax officers;
quantitative researchers in the tax field can only bypass this problem.

Trade Policy of Import Substitution

Import substitution, the policy of creating industry at home by
switching demand from imported commodities to domestically produced
commodities, has generally been adopted by a number of underdeveloped
countries in the early stages of their industrial development. To
implement this policy, high tariff rates, import restrictions and
import controls are generally used. These measures, especially
high tariff rates, create an excess burden to consumers of domestic
products since the domestic product prices tend to be set near
import prices which are normally higher due to import tariffs.
In other words, this excess burden or implicit tax is considered
to be the excess of the price the consumers have to pay under
tariff protection above the price consumers would have paid if
there were no tariff protection. This difference in price is a
welfare loss to the consumers due to the policy of tariff protec-
tion.

Generally, import substitution policy in most underdeveloped
countries emerges when the countries face a balance of payments prob-
lem due to increased demand for imports which results from rising per
capita income.[7] An attempt to curb the demand for import by increasing
tariff rates for luxury products becomes rationalized as a protective
device to encourage industrial development of their own. A domestic
industry, normally, is said to be protected if tariffs or other import

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[7]Power, John H. "Import Substitution as an Industrialization
Strategy", The Philippines Economics Journal, Vol. no. 2, 1966.

controls lead to higher prices or a reduction in previously imported commodities. Basically, a nominal rate of protection (tariff rate) is the indicator of the extent to which each industry is protected. However, this rate alone is inadequate as an indicator since it does not take into account the protection effect on raw materials and intermediate products used in the process of production. Therefore, the concept of an effective rate of protection was devised to analyse this problem.[8] It is defined as the percentage difference between the domestic value added and the hypothetical free trade value added. If domestic producers produce at higher costs than the free trade situation but are still able to compete with imports of the same product, the protection has the effect of raising domestic value added above the free trade value added.

Theoretically, import substitution policies adopted in most underdeveloped countries, incur costs in several ways.[9] First, they create an overvaluation of domestic currency. This is because domestic demand for imports would increase if there were no tariff protection; to maintain the same level of demand requires a devaluation of domestic currency. The effect of the overvaluation of domestic currency is biased against the export sector (mostly agricultural). Second, the policy leads to

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[8] Ibid.

[9] Among the writers who emphasize the disadvantages of an import substitution policy are Balassa, Bela. "Tariff Protection in Industrial Countries: An Evaluation, Journal of Political Economy, (December, 1965); Power, John H. "Import Substitution as an Industrialization Strategy," The Philippines Economics Journal, Vol. no. 2 1966; and Cordon, W. M. The Theory of Protection (London: Oxford University Press, 1971).

a misallocation of resources, since protection is an intervention with
free trade, which by assumption produces the most efficient allocation.
Moreover, to save a unit of foreign exchange through import substitution
requires more resources than it would be needed to earn a unit of foreign
exchange through export expansion. And since the protection is generally
for finished consumption goods, a bias is created against domestic
production of intermediate goods, capital goods and raw materials
which are usually more liberally imported than are the finished consumption
goods. Third, import substitution may lead to consumption liberalization[10]
(the increase in domestic consumption output of the industries under pro-
tection is not fully matched by a decline in imports). This might result
in a reduced rate of saving.

An empirical study was recently made by Suwankiri, Trairong[11] to
measure the various costs of protection in Thailand in 1971. The study
employs the effective rate of protection as well as the nominal rate
of protection to measure the cost of protection, using both graphs and
mathematical models. The measurement is essentially a comparison between
free trade and trade under protection. He divides the total cost into
four parts. First is the "statistical" cost defined as the benefit
that would be derived from the disappearance of inefficeint industries
after protection is eliminated. It is equivalent to the increase in

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[10]See A. R. Khan, "Import Substitution, Consumption Liberalization
and Export Expansion," Pakistan Development Review, 1963 and Power,
John, H. "Industrialization in Pakistan: A Case of Frustrated Take off?"
Pakistan Development Review, 1963.

[11]The Cost of Protection (Ph. D. Dissertation, University of
Hawaii, 1975).

the amount of products that people could consume while spending the same amount of money they did under the protection system. This cost was estimated at 0.24% of GNP in 1971. Second is the "dynamic" cost which equals excess profits and excess costs of production due to in-efficiency under protection in those industries that would survive and become competitive under the free trade situation. The amount of this cost was found to be 1.37% of GNP. Third is "consumers' surplus" which is equivalent to the difference in the increase in import consumption due to the elimination of tariff protection and the decrease in consumption of imports, due to the devaluation of domestic currency. The value of this cost amounted to 0.1% of GNP. The last cost is called the "terms of trade effect" which arise from the increase of exports due to both the elimination of export taxes and the effect of domestic currency devaluation. In fact the terms of trade effect was considered as a benefit rather than cost since this effect resulted in an increase of exports due to domestic currency devaluation. The value of the term of trade effect equals 1.34% of GNP.

Adding the first three costs and subtracting the terms of trade effect gives the net cost of protection of Thailand in 1971 of 0.37% of GNP. In his analysis, Suwankiri considered the first three costs as a welfare loss to consumers while the welfare gain and loss to pro-ducers were found to cancel each other out.

The welfare loss according to Suwankiri's measurement may be taken as the excess burden to the consumer due to the tariff protection policy of Thailand. The next question is how this excess burden or

implicit tax burden affects the conventional measurement of tax burden distribution. From the net cost measured by Suwankiri, this cost is a cost to consumers only. Since this cost is not included in the government tax revenue, the conventional tax incidence study will not consider it in the measurement of tax burden distribution. However, even though this cost is not itself a tax, it creates a burden that goes beyond the revenue from tariff. Therefore it should be included as part of the tax if the real burden distribution is to be obtained. But since the loss in welfare (or the excess burden) resulting from tariff protection is an excess burden to consumers and because the consumers' income is generally lower than the producers' income, this amount of excess burden (0.37% of GNP) should be allocated relatively more to the lower income classes than to the higher income classes. The effective tax rates will be higher compared to the conventional effective tax rates but the lower income classes will experience a greater increase in the effective tax rates (burden) than the higher income classes. This result is clearly opposite to the case of bribe money in tax evasion.

It is concluded that the excess burden or implicit tax burden investigated above, if taken into account, would give a real burden distribution of taxes differing from a measurement of a conventional tax burden distribution. Admittedly, it is difficult to estimate accurately the amount of bribe money for each income class or to allocate the excess burden of taxes that arises from tariff protection policy among lower income classes. Nevertheless, recognition of these implicit tax burdens is useful in appraising the qualitative aspects of tax incidence, even though of limited value for quantitative analysis.

CHAPTER IV

QUANTITATIVE STUDY OF TAX INCIDENCE, 1969 and 1971

Tax incidence studies in many advanced countries, employing the mathematical models presented in Chapter III, are done fairly easily because the basic data required (i.e., distribution of AGI by income class, distributive series of money income, capital income and expenditure series by income class) are available in forms that can be readily used. This convenience, however, is not true for Thailand and other less advanced countries. Limited and inconsistent data require a great deal of effort, adjustment and assumptions to convert such basic data into the form required for the necessary calculations.

Money Income Distribution of Household by Income Class

An extimation of money income distribution for 1969 requires two sets of data -- national household distribution by income class and national average money income distribution by income class. These two sets of data can be estimated from two surveys conducted by the National Statistical Office of Thailand. The first survey, "Population and Housing Census (PHC)", was conducted primarily in 1969 and finished in 1970. Since there is only one year overlapping, the data of households in this survey provides information on the number of housholds in urban and rural areas. The second survey, "Socio Economic Survey (SES), 1968-69," provides data relevant to the estimation of money income distribution which are:

1. Percentage distribution of households by region for urban and rural areas.

2. Percentage distribution of households by household's annual money income class and by region for both urban and rural areas.

3. Average annual money income per household by region and by annual money income class for both urban and rural areas.

With these four sets of data, the money income distribution of the household by income class can be estimated as follows:

First, the national distribution of households by income class is estimated (see Appendix C). Second, estimation is made of the total money income distribution by income class for urban and rural areas (see Appendix D). Third the total money income of both urban and rural areas is combined to arrive at the national money income distribution by income class as shown in Table IV-1. (See details for merging urban and rural areas in Appendix C).

It should also be noted that tax burden distributions by region and by rural-urban areas would also be interesting from the policy point of view. However, since the data as to the amount of each tax classified by regions and rural-urban areas are not available, this study is necessarily focused on the national level only.

The National Statistical Office of Thailand also conducted the Socio-Economic Survey (SES) in 1971, 1972 and 1973. But each year's survey is for some regions only, making it impossible to derive national data. These surveys, therefore, are useful only for analysis at the regional level and are not applicable to this study.

Faced with this problem, estimation of the distribution of money income by income class for 1971 has to be extrapolated from the available data of 1963 and 1969. The distribution of money income by income class

Table IV-1

Distribution of National Households Money
Income by Income Class, 1969

| Income Class | (1) Household | | (2) Money Income | | (3) |
	(Thousand)	Percent	(Millions of Baht)	Percent	Average Money Income (Baht)
Lower than 3,000	1,381.7	23.4	2,567.6	4.0	1,858.3
3,000 - 5,999	1,378.7	23.3	5,910.8	9.2	4,287.2
6,000 - 8,999	951.9	16.1	6,850.4	10.7	7,196.6
9,000 - 11,999	591.8	10.0	6,007.5	9.4	10,151.2
12,000 - 14,999	410.9	6.9	5,426.6	8.5	13,206.6
15,000 - 17,999	281.4	4.8	4,541.5	7.1	16,138.9
18,000 - 23,999	259.0	4.4	5,603.6	8.8	21,635.5
24,000 - 29,999	207.5	3.5	4,989.1	7.8	24,043.9
30,000 - 35,999	207.4	3.5	6,356.3	9.9	30,647.5
36,000 - 47,999	91.9	1.6	4,241.4	6.6	46,152.3
48,000 - 59,999	71.1	1.2	3,896.4	6.1	54,801.6
60,000 and over	75.2	1.3	7,579.2	11.9	100,787.2
All Classes	5,908.5	100.0	63,974.4	100.0	10,827.5

Sources: Column (1) Table C-5
Column (2) Table D-3 and D-4
Column (3) = (2)/(1)

Table IV-2

Distribution of National Households' Money Income

by Income Class, 1971

Income Class	Money Income 1969 (Millions of Baht)	Growth Rate 1963-69 Percent	Money Income 1971 (Millions of Baht)	Percent
Lower than 3,000	2,567.6	-8.7	2,132.8	2.6
3,000 - 5,999	5,910.8	3.4	6,320.8	7.6
6,000 - 8,999	6,850.4	7.1	7,851.8	9.4
9,000 - 11,999	6,007.5	4.7	6,590.6	7.9
12,000 - 14,999	5,426.6	15.8	7,270.6	8.7
15,000 - 17,999	4,541.5	12.4	5,734.6	6.9
18,000 - 23,999	5,603.6	13.3	7,193.2	8.6
24,000 - 29,999	4,989.1	24.0	7,671.2	9.2
30,000 - 35,999	6,356.3	31.3	10,958.0	13.1
36,000 - 47,999	4,241.4	20.1	6,117.8	7.3
48,000 - 59,999	3,896.4	25.7	6,156.5	7.4
60,000 and over	7,579.2	11.6	9,439.6	11.3
All Classes	63,970.4	10.8	83,437.5	100.0

Notes: (1) The 1963 money income distribution is adjusted from
Krongkaew, Medhi, "The Income Redistributional Effects of
Taxes and Public Expenditures in Thailand: An Intertemporal
Study," Ph.D dissertation, (Michigan State University, 1975).

for 1971 is shown in Table IV-2. It should be noted that since the
wholesale price index of Thailand did not significantly change during
1969 and 1971,[1] no adjustment is made for money income distribution
in 1971 to account for inflation.

Income Concepts

The income concept used to derive the above money income dis-
tribution is defined, according to the SES, as the amount of money
earned by all members of the household, including wages, salaries,
profit from self-employment, shares of profit and interest, rent,
and income from other sources. This concept of income, however, is not
as broad as the definition of income given by H.C. Simons and R.M.
Haig,[2] which includes, among other things, income in kind and transfer
payments as well as money income. The choice of income concepts is
important because different concepts of income will result in different
patterns of income distribution as well as incidence. In this study,
two income concepts are employed. First, household income (Y_t) includ-
ing income in kind, as well as money income. Second, adjusted house-
hold income (Y_{t2}) including household income, under-reported income

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[1] Bank of Thailand, Monthly Bulletin, September 1973, Table V. 11.

[2] According to H.C. Simons' income is defined as the amount of an
individual's consumption outlay plus the change in his net worth,
Personal Income Taxation, (University of Chicago Press, 1938). In
R.M. Haig's terminology, income is "the money value of the net
accretion to one's economic power between two points in time
The Concept of Income (New York: Columbia University Press, 1921).
These definitions are essentially interchangeable, for present pur-
poses.

adjusted (the difference between household income in the national income account and household income is SES), corporation tax, net corporate retained earnings and indirect taxes. The first income concept is used because the necessary data comes from a direct source and because it conforms with Thai income tax law. The second concept of income, though requiring adjustment, seems to be more comprehensive and is equally important because it gives a broader and more accurate picture of the tax burden distribution of Thailand.

Household Income

Although income in kind is not included in money income data published in the SES, the Survey, however, does include a question as to income in kind in the form of goods and services produced at home or received free. This information was extracted from the original tape data by Dr. Oey Astra Meesook[3] and the data is presented by region and by income class. Since the number of households by region and by income class are known, it is easy to estimate the distribution of urban and rural income in kind as well as the national income in kind (see Appendix E). Total income in kind as well as average income in kind for the nation as a whole are presented in Table IV-3.

It should be noted that nearly 85% of total income in kind in 1969 is concentrated in the income classes lower than ฿ 9,000 which is about 53% of the money income in the corresponding income classes. Income in kind is therefore a significant element of income for the lowest

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[3]A faculty member of the Economics Department, Thammasat University, Thailand.

Table IV-3

Distribution of Income In Kind by Income

Class, 1969

Income Class	Household (Thousands)	Total Income In Kind (Millions) of Baht	Percent	Average Income In Kind (Baht)
Lower than 3,000	1,381.7	3,819.6	35.0	2,764.6
3,000 - 5,999	1,378.7	2,713.4	24.8	1,968.2
6,000 - 8,999	951.9	1,545.0	14.1	1,623.0
9,000 - 11,999	591.8	729.6	6.7	1,233.2
12,000 - 14,999	410.9	505.5	4.6	1,230.5
15,000 - 17,999	218.4	357.8	3.3	1,638.3
18,000 - 23,999	259.0	303.6	2.8	1,172.2
24,000 - 29,999	207.5	237.6	2.2	1,145.0
20,000 - 35,999	207.4	269.2	2.5	1,297.9
36,000 - 47,999	91.9	152.3	1.4	1,657.2
48,000 - 59,999	71.1	151.1	1.4	2,125.2
60,000 and over	75.2	135.1	1.2	1,796.5
All Classes	5,908.5	10,919.8	100.0	1,848.2

Source: (1) Table C - 5
        (2) Table E - 5
        (3) (2) / (1)

income classes and its exclusion from the money income would give a misleading income distribution as well as tax incidence. Household income, the first income concept used in this study, is obtained by adding income in kind to money as shown in Table IV-4. Assuming that income in kind for 1971 is the same as for 1969, we can estimate household income for 1971, which is shown in Table IV-5.

Adjusted Household Income

The previous household income concept (Y_t) can be made more comprehensive thereby corresponding to Haig and Simons' income concept by adding some additional elements of income to household income derived from SES to arrive at adjusted household income (Y_{t2}). These adjustements are made possible by statistical data in the national income account of Thailand[4] whose concept of household income is similar to that of the Survey's. The process and details of adjustment are further discussed below.

Underreported Income Adjusted

Household income (money income plus income in kind) derived from SES is expected to be underestimated because households, especially in the middle and higher income classes, are likely to report their income lower than they actually receive for fear, among other things, of the tax surcharge. The widespread practice of tax evasion among the Thai people as discussed in Chapter III, seems to support this belief.

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[4]National Economic and Social Development Board (NEDB), National Income of Thailand 1972-73 (Bangkok, Thailand), Account No. 4.

Table IV-4

Distribution of Household Income

by Income Class, 1969

(Millions of Baht)

Income Class	(1) Money Income	(2) Income In Kind	(3) Household Income	
			(Amount)	Percent
Lower than 3,000	2,567.6	3,819.6	6,387.2	8.5
3,000 - 5,999	5,910.8	2,713.4	8,624.2	11.5
6,000 - 8,999	6,850.4	1,545.0	8,395.4	11.2
9,000 - 11,999	6,007.5	729.6	6,737.1	9.0
12,000 - 14,999	5,426.6	505.5	5,932.1	7.9
15,000 - 17,999	4,541.5	357.8	4,899.3	6.5
18,000 - 23,999	5,603.6	303.6	5,907.2	7.9
24,000 - 29,999	4,989.1	237.6	5,226.7	7.0
30,000 - 35,999	6,356.3	269.2	6,625.5	8.9
36,000 - 47,999	4,241.4	152.3	4,393.7	5.9
48,000 - 59,999	3,896.4	151.1	4,047.5	5.4
60,000 and over	7,579.2	135.1	7,714.3	10.3
All Classes	63,970.4	10,919.8	74,890.2	100.0

Sources: (1) Table IV-1
          (2) Table IV-3
          (3) = (1) + (2)

Table IV-5

Distribution of Household Income

by Income Class, 1971

(Millions of Baht)

Income Class	(1) Money Income	(2) Income In Kind	(3) Household Income	
			(Amount)	Percent
Lower than 3,000	2,132.8	3,819.6	5,952.4	6.3
3,000 - 5,999	6,320.8	2,713.4	9,034.2	9.6
6,000 - 8,999	7,851.8	1,545.0	9,396.8	10.0
9,000 - 11,999	6,590.6	729.6	7,320.2	7.8
12,000 - 14,999	7,270.6	505.5	7,776.1	8.2
15,000 - 17,999	5,734.6	357.8	6,092.4	6.5
18,000 - 23,999	7,193.2	303.6	7,496.8	7.9
24,000 - 29,999	7,671.2	237.6	7,908.8	8.4
30,000 - 35,999	10,958.0	269.2	11,227.2	11.9
36,000 - 47,999	6,117.8	152.3	6,270.1	6.6
48,000 - 59,999	6,156.5	151.1	6,307.6	6.7
60,000 and over	9,439.6	135.1	9,574.7	10.1
All Classes	83,437.5	10,919.8	94,357.3	100.0

Source: (1) Table IV-2
(2) Table IV-3
(3) = (1) + (2)

The 1969 household income reported in the national income account of Thailand, which includes money income as well as income in kind, was estimated at 102,615 million baht. The difference between this and the 1969 household income derived from SES, 74, 890.2 millions of baht (Table IV-4), is considered underreported household income. However, household income in the national income account includes property income of the household as well as the income of private nonprofit institutions; since this latter income does not accrue to households it should be deducted from total property income. But since property income is aggregated and there is no record of how much property income originates in private nonprofit insitutions, it is assumed that 25% of total property income originates in nonprofit institutions. This assumed amount is deducted from household and private nonprofit institution income to derive at household income. The next step is to subtract from this household income amounts of the SES household income, to derive underreported income.

As for the shifting of taxes, the national income account assumes that the personal income tax and corporation tax are not shifted and that the rest of the taxes are fully shifted forward to consumers. However, in this study part of some taxes are considered not fully shifted to consumers (i.e., business tax and corporation tax).[5] Since any portion of the tax which is assumed not to be shifted should be included in household income, and because the allocation pattern of the tax is different from income, the portion of taxes that is considered

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[5]See pp. 79-85 below.

shifted to the consumers in the national income account but is considered
not shifted in this study is subtracted from indirect taxes and added
to the amount of underreported income. The adjustments shown below
are made along with the tax incidence assumption in this study, yielding
"underreported income adjusted."

Households' and private nonprofit institutions' income	102,615.0
Less: 25% of total property income	2,453.5
Households' income from national income account	100,161.5
Less: Households' income from SES	74,890.2
Underreported income	25,271.3
Plus unshifted taxes:	
Land development tax	106.7
Stamp tax	123.1
One-third of business tax	1,122.4
Rice premium and export duties	1,659.9
Underreported income adjusted for unshifted taxes	28,283.4

The next question is how to allocate the amount of underreported
income adjusted among households in several income classes. It is
shown in Table IV-4 and IV-5 column (3) that the households from income
class ฿ 24,000 and over receive 33.8 and 42.3 percent of household
income respectively, and since households in the higher income classes
tend to understate their actual income, it seems to be reasonable to
assume that 30% of the underreported income adjusted belongs to the
middle and high income classes and should thus be allocated according

to their money income distribution. Since a family of five in Thailand
is not liable for income tax it its annual income is less than ฿ 20,000,
it is then assumed that the middle income class begins at ฿ 24,000
and over. The other 70% of underreported income adjusted is allocated
according to money income distribututution.

Corporation Tax

The corporation tax, in the national income account, is not included
in household income as are the other direct taxes. However, since
this amount of tax is paid out of the profits of corporation which are
(with few exceptions) owned by members of Thai households, the corporation
tax should be considered income of the household and should be included
in the income base. Allocation of this tax is made along with the
incidence assumption of the corporation tax in this study.

Net Corporate Retained Earnings

To derive aggregates of income in accordance with Haig's and Simons'
concepts, all savings, whether they are household or corporation savings,
must be included in the income base. Corporation savings in Thailand
were reported to be 2,358 million baht in the national income accounts
for 1969. The total is composed of savings by private corporations
(48%) and by government enterprises (52%). However, since this study
focuses only on the distribution of tax burden on the households,
government revenues other than taxes are not included. Therefore, savings
of government enterprises are excluded from the income base. Total
private corporation savings, or net retained earnings of private
corporations, is 1,131.8 million baht.

Ideally, the amount of corporation savings should be allocated along with the distribution of dividend income by income class. Unfortunately, this latter data is not available. But it is generally known that stocks and shares of the corporations are held mostly by the middle and upper income classes in Thailand; the poor rarely have these assets. Therefore, 90% of corporation saving will be allocated, by money income distribution of the households, to the "middle" income class ฿ 24,000 and over. The rest will be allocated according to money income distribution.

Indirect Taxes Adjusted

Since indirect taxes are part of income paid in transactions, it is appropriate to include these taxes in the income base. However, as stated previously,[6] some adjustment must be made before allocation in order to make them consistent with the incidence assumptions. Indirect taxes for 1969, as reported in the national income account were 15,408 million baht. This amount is reduced to 12,395.9 million baht after deducting taxes which were considered fully forward-shifted in the national income account but not in this study, including the amount of all land development tax, stamp tax, rice premium and export duties, and one-third of business tax. The adjusted amount is, in turn, added to underreported income. The amount of "indirect taxes adjusted" is then allocated according to total expenditure distribution. The distribution of adjusted household income by income class for 1969 is shown in Table IV-6.

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[6]See p. 69.

Table VI-6

Distribution of Adjusted Household Income

by Income Classes, 1969

(Millions of Baht)

Income Class	Households' Income	Under-reported Income, Adjusted	Corporation Tax	Net Corp. Retained Earnings	Indirect Taxes Adjusted	Adjusted Household Income (Amount)	Percent
Lower than 3,000	6,387.2	792.0	37.5	4.5	781.0	8,002.2	6.8
3,000 - 5,999	8,624.2	1,821.4	77.9	10.4	1,425.5	11,959.4	10.2
6,000 - 8,999	8,395.4	2,118.4	86.4	12.1	1,475.1	12,087.4	10.3
9,000 - 11,999	6,737.1	1,861.0	76.5	10.7	1,326.4	10,011.7	8.5
12,000 - 14,999	5,932.1	1,682.9	68.8	9.6	1,190.0	8,883.4	7.5
15,000 - 17,999	4,899.3	1,405.7	56.1	8.0	929.7	7,298.8	6.2
18,000 - 23,999	5,907.2	1,742.2	68.6	10.0	1,115.6	8,843.6	7.5
24,000 - 29,999	5,226.7	3,105.6	74.5	196.2	979.3	9,582.3	8.2
30,000 - 35,999	6,625.5	3,954.1	91.0	250.6	1,066.0	11,987.2	10.2
36,000 - 47,999	4,393.7	2,638.8	59.0	167.4	632.2	7,891.1	6.7
48,000 - 59,999	4,047.5	2,429.5	53.5	153.6	557.8	7,241.9	6.2
60,000 and over	7,714.3	4,731.8	100.2	298.7	917.3	13,762.3	11.7
All Classes	74,890.2	28,283.4	850.0	1,131.8	12,395.9	117,551.3	100.0

Source: See text.

Exactly the same procedure is applied to derive adjusted household income for 1971; the estimation is shown in Table IV-7.

Shifting Incidence Assumptions and Allocation of Tax Burden

Incidence theory deals with the distributive effects of taxes in causing changes in commodity prices and factor income. This theory addresses three basic and difficult questions. First, is the tax shifted at all? Second, in which directions is the tax likely to be shifted and who ultimately has to bear the tax? Third, to what extent is the tax shifted? Ideally, these questions should be answered with empirical evidence. However, agreement on the results may not readily result; despite a number of empirical studies on the shifting and incidence of taxes conducted in the United States, there is still no consensus among economists in this field regarding major taxes, notably the corporation tax and property taxes.

The lack of agreement on the shifting of particular tax incidence generally stems from the use of different basic assumptions of economic behavior. If one assumes perfect competition, price flexibility, perfect mobility of factors and inelasticity of the supply of labor and of the supply of savings, the conclusions for some taxes drawn under these conditions will be as follows:[7] the personal income tax does not shift because the tax leaves work effort and savings unchanged. General sales taxes are fully shifted to the consumers in proportion to their

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[7] For more details see Pechman, Joseph A. and Okner, Benjamin A. Who Bears the Tax Burden? (Washington, D.C.: The Brookings Institution, 1974), pp. 29-37.

Table IV-7

Distribution of Adjusted Household Income

by Income Classes, 1971

(Millions of Baht)

Income Class	Households' Income	Under-reported Income, Adjusted	Corporation Tax	Net Corp. Retained Earnings	Indirect Taxes Adjusted	Adjusted Household Income (Amount)	Percent
Lower than 3,000	5,952,4	415.9	34.8	3.2	785.9	7,192.2	5.5
3,000 - 5,999	9,034.2	1,215.6	81.3	9.4	1,434.6	11,775.1	8.9
6,000 - 8,999	9,396.8	1,503.5	93.4	11.7	1,484.5	12,489.9	9.5
9,000 - 11,999	7,320.2	1,263.6	80.7	9.8	1,334.8	10,009.1	7.6
12,000 - 14,999	7,776.1	1,391.5	82.2	10.8	1,197.6	10,458.2	7.9
15,000 - 17,999	6,092.4	1,103.6	64.6	8.6	935.6	8,204.8	6.2
18,000 - 23,999	7,496.8	1,375.5	79.7	10.7	1,122.8	10,085.5	7.6
24,000 - 29,999	7,908.8	2,773.9	83.4	223.8	985.5	11,975.4	9.1
30,000 - 35,999	11,227.2	3,953.0	110.8	319.3	1,072.9	16,683.2	12.7
36,000 - 47,999	6,270.1	2,209.5	63.0	179.1	636.2	9,357.9	7.1
48,000 - 59,999	6,307.6	2,232.4	61.5	180.3	561.4	9,343.2	7.1
60,000 and over	9,574.7	3,411.3	95.6	275.6	923.1	14,280.3	10.8
All Classes	94,357.3	22,849.3	931.0	1,242.3	12,474.9	131,854.8	100.0

Source: See text.

total expenditures because the tax does not affect relative prices and
hence does not alter consumption patterns. However, specific excise
taxes do affect relative prices, thus the burden will be borne by those
who consume taxed products. The corporation tax, under these assump-
tions, will be borne by capital income by lowering the rate of return
in the corporate sector. Moreover, the effect of capital mobility
between taxed and untaxed sectors will eventually lead to a reduction
in the rate of return in both sectors. For property taxes, that tax on
land will be borne by land owners since land is assumed to be fixed in
supply. The property tax on commercial and residential buildings is
considered to rest on owners of this capital if the supply of savings is
not responsive to the rate of return.[8]

The above conclusions regarding the incidence and shifting of taxes
can no longer remain true if assumptions are changed as to the competi-
tiveness of the market as well as the responsiveness of savings with
respect to the rate of return. Assuming that markets are not competitive,
and firms do not necessarily try to maximize their profits, firms may
raise price to cover the corporation tax. Alternatively, a firm may have
a target rate of return on invested capital, and if the tax causes the
firm's rate of return to fall below this target rate, it will encourage
this firm to shift the tax forward to consumers or backward to workers,
or partly backward and partly forward. As for property taxes, that on
buildings may be shifted to the renter if the property owner has suffi-
cient market power. If the imposition of property taxes causes a

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[8]Ibid., p. 32.

reduction in the supply of buildings, the result will be a rise in the price of services of dwelling units. Thus the burden of property tax on residential buildings will be shifted to tenants.

Since an empirical study of tax shifting is not available for Thailand, this study has to resort to observation of market behavior as well as theoretical judgments of the shifting incidence of taxes in the country. Therefore, before any shifting analysis is made, it is necessary to point out relevant institutional settings in the Thai economy. These institutional settings to some extent influence the behavior of business in Thailand.

The first institutional setting is the prevalence of tax evasion. As noted in Chapter III, it is believed that businesses and traders in Thailand widely practice tax evasion (about 74% of the tax evasion found in 1969 originated from businesses and corporations). Generally, if the chance of being caught is slim, it is unlikely that businesses will raise prices to cover the full amount of taxes legally due; lower prices promoting volume sales would be more preferable. Practially, businesses will adjuste their accounts so as to minimize actual tax payments, and set prices on the assumption that any tax evasion attempted will be undetected. If evasion is not successful, the burden of the tax will be borne by business.

The second institutional consideration is the fact that there are many small businesses whose prices are readily subject to bargaining. When debts must be paid off, businesses might be willing to lowerprices to the extent that they have to absorb part or all of the taxes.

Personal Income Tax

Most economists seem to agree that the personal income tax is borne by those on whom the tax is imposed. This follows from the assumption that the labor supply to the economy as a whole is perfectly inelastic with respect to wage rates. This implies that the substitution effect and income effect due to the imposition of income taxes work in such a way that work effort is unchanged.

In the case of Thailand, Paitoonpong, Sarawoot[9] found that labor force participation with respect to wage rates is fairly inelastic for males of all age groups and elastic only for the female age group 40-60. However, since this group of females constitutes only 5.5% of the total labor force, it is reasonable to assume that the total labor supply of Thailand is inelastic with respect to wage rates. In addition, the absence of labor unions in Thailand eliminates a means of obtaining wage increases which would help shift their income tax burden to their employers. It is, therefore, reasonable to assume that the personal income tax in Thailand is borne by those on whom the tax is imposed.

Allocation of the personal income tax burden among income classes is made possible by statistical data from the Revenue Department of Thailand. However, since the actual tax collection is classified by taxable income class rather than adjusted gross income class, some adjustments have to be made. First, deductions and exemptions must be added to the amount of taxable income for each taxable income class to arrive at

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[9]"The Labor Supply of Thailand: An Empirical Analysis of the Determinants of Participation Rates" (Ph.D. Dissertation, University of Hawaii, 1976).

an adjusted gross income. Second, each AGI in every taxable income class must be divided by the corresponding number or return to get the average money income per household, assuming that each return represents a household unit. Third, comparison of the estimated average money income with the average money income derived from the Survey is necessary to determine the amount of tax that should be assigned to the various household income classes.

Property Taxes

The house and land tax is imposed on the buildings rented or used for commercial purposes, but residential houses are exempted. This tax is assumed shifted forward to tenants on the ground that the leasing procedure in Thailand encourages shifting. Typically, a large lump sum payment is made for a lease of 10 to 15 years; the annual rent is quite low and this lump sum payment is not included in the annual rental income, which is the tax base. Since the new leases are always accompanied by an increase in lump sum payment, it is believed that the owners of lands and buildings are likely to have power to raise prices to cover the tax.

The land development tax is assumed to be borne by land owners because the total supply of land is taken as fixed. In addition, since this tax rate is negligible (less than 1% of the value of the land), it is likely that this tax is not even considered as a cost of land holding when the land is sold.

The house and land tax is allocated among income classes in proportion to their housing expenditures (see Appendix G). Since most land ownership is concentrated among middle and upper income classes, it is

assumed that 80% of the land development tax is allocated by money income

distribution of ฿ 24,000 and over. The other 20% of the tax is allocated

according to money income distribution across the range of household

income (see Appendix H).

Corporation Tax

The most controversial subject of tax shifting seems to be the corpo-

ration tax. Under perfect competition, most economists view the corpora-

tion tax as being borne by capital income in the short run since the supply

of capital for firms and industries as a whole is assumed fixed in this

case. In the long run, even though the supply of capital for the economy

as a whole is assumed fixed, the supply of capital for any single firm is

variable. The movement of capital between taxed (corporate) and untaxed

(non-corporate) sectors will result in equal reduction of the rate of

return to capital in both sectors. Whether capital alone will bear the

tax or whether it will be shared by both capital and labor depends on the

two sectors' production functions as well as the elasticity of substitu-

tion of products between those two sectors.[10] However, Harberger concludes

that capital movement seems to produce only minor changes in factor shares

and that capital owners will bear the entire burden of the tax.

Even if perfect competition was replaced with a monopoly situation,

the above result will not change as long as porfit maximization is the

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[10]Arnold C. Harberger, "The Incidence of Corporation Income Tax,"
Journal of Political Economy, June, 1962. A summary of this article can
be seen in Musgrave, Richard A. and Musgrave, Peggy B. Public Finance in
Theory and Practice (New York: McGraw-Hill, 1973), pp. 398-400.

goal of the corporation.[11] However, many economists believe that under imperfect competition firms may maximize sales rather than profits.[12] This assumption will lead to a shift in the corporation tax burden. Shifting of the corporation tax incidence is also possible under an oligopoly situation where price leadership is practiced.[13]

An econometric study by Krzyzaniak and Musgrave concluded that within the U.S. economy the corporation tax is fully shifted in the short run.[14] Other studies found that corporation tax was not shifted.[15] Perhaps a better state of art in the future might help to settle this controversial issue.

As to the case of Thailand, the market is far from perfect competition. The study of wholesale markets by Kerdpibule, Udom[16] revealed that they behave oligopolistically, since a few large firms control more than half the volume of business in Thailand. In addition, he found that wholesalers tend to rely on speculation and profiteering rather than a traditional rigid pricing practice. This supports the contention that corporations in Thailand do have power to raise prices to cover tax. They

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[11]Harberger, pp. 238-40.

[12]See Baumol, W.J. Business Behavior, Value and Growth, Rev. ed. (New York: Harcourt, Brace, and World, 1967).

[13]Musgrave and Musgrave, op. cit., pp. 403-405.

[14]Krzyzaniak, Marion and Musgrave, Richard A. The Shifting of Corporation Income Tax (Baltimore: Johns Hopkins, 1963).

[15]Hall, C.A. Jr., "Direct Shifting of the Corporation Income Tax in Manufacturing." AER, Paper and Proceedings, May, 1964. See also Turek, J.L. "Short-Run Shifting of the Corproation Income Tax in Manufacturing," (Unpublished doctoral dissertation; Yale University), 1969.

[16]"Competitiveness in the Bangkok Wholesale Market," Kasetsart University, Bangkok, Thailand, 1974.

may shift part of the tax to consumers and bear the burden of the rest of the tax. Moreover, backward shifting of the tax also cannot be ruled out on a priori grounds.

Statistical data presented in Table IV-8 might be a rough indicator that corporations in Thailand bear some burden of corporation tax in the short-run. In 1973, corporation tax rates were increased 5% for all levels of profit. The result was a reduction in both rate of return and profit share even though corporation assets and income received increased. The reduction in the rate of return from 1971 to 1973 was 32% while the share of profit was reduced by 40%. There is no other empirical study concerning the shifting burden of corporation tax in Thailand. On the basis of admittedly limited evidence, it is concluded that corporations in Thailand bear a portion of corporation tax. That portion is assumed to be one-third.

The other two-thirds of the corporation tax may, by assumption, either be shifted forward to consumers or backward to labor. Observation in Thailand reveals that the employer typically occupies a monopsonistic position in the labor market. This is supported by the fact that there is no labor union in Thailand and the observation that most laborers are likely to receive less than their marginal-value product.[17] Moreover, since the supply of labor has been found highly inelastic with respect to wages, it is reasonable to assume that one-third of the corporation tax is borne by labor and that the other one-third of corporation tax is shifted to consumers.

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[17]In 1973 a committee was formed by the Chairman of Advisory Committee to the Prime Minister to study minimum wage rates in Thailand. I was told informally that the study found among the other things that most of the unskilled labor as well as some skilled labor are paid less than their marginal productivity.

Table IV-8

Corporation Rate of Return and Profit Shared, 1969-1973

(Millions of Baht)

| Year | Profit | | Assets | Income | Rate of Return (%) | Profits Shared (%) |
	Before Tax	After Tax				
1969	3,891	3,212	94,799	111,732	3.3	3.4
1970	4,581	3,837	111,428	129,483	3.4	3.5
1971	4,889	4,135	146,346	160,834	2.8	3.0
1973	5,026	3,821	201,529	225,268	1.9	2.2

Source: Thailand, Revenue Department, Annual Report, 1969-73.
Note: Rate of return = Profit after tax / Assets.
           Profits shared = Profit before tax / Corporation income.

The part of the corporation tax borne by the corporation should be allocated among households by dividend income distribution. Unfortunately data for this distribution is not available. Since dividend income is probably received only by middle and high income classes, it is reasonable to allocate this part of the tax among income recipients of ฿ 24,000 and over (see Appendix H). The part that is borne by labor is alloecated among low income recipients (under ฿ 24,000). The rest of the corporation tax is allocated among all income groups according to expenditure patterns by matching each type of corporation with the corresponding types of expenditures.

General Sales Taxes

Business Tax

As for business tax, the tax on gross sales, there seems to be relatively less controversy as to the shifting of the tax incidend. Assuming: (i) that all markets are perfectly competitive, (ii) constant cost, and (iii) perfect inelasticity of factor supply, imposition of the business tax will raise prices to cover the amount of tax. In imperfect competition such as oligopoly, and assuming: (i) that uniform pricing policy and target rate of return are adopted, (ii) use of markup pricing technique and (ii) constant cost to the firm and industry, the business tax will result in a direct increase in average cost for all firms leading to price increases by the amount of the tax.[18] However, Earl Rolph points out that sales taxes will be shifted backward to factors via a decline in factor prices.[19] This argument is not acceptable to many economists on the ground that Rolph ignores the offsetting effect of demand by government spending out of tax revenues.

All past tax incidence studies on Thailand have assumed that the business tax is fully forward shifted. However, these studies have not taken into account oligopolistic and oligopsonistic elements with respect to labor. It is likely that the behavior of businesses in Thailand will

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[18]See Due, John F. and Friedlander, Ann F. Government Finance Economics of the Public Sector (Richard E. Irwin Inc., 1973), pp. 364-369. See also Due, John F. "Sale Taxation and Consumer," American Economic Review, December, 1963.

[19]Rolph, Earl E. "A Proposed Revision of Excise Tax Theory," Journal of Political Economy, April, 1952.

be sufficiently influenced by those two institutional factors to establish

an alternative pattern of shifting of the business tax burden.

In Thailand, the fact that the wholesale market behaves like an oli-

gopoly suggests that the business tax is likely to be shifted to the

consumer of taxed products. On the other hand, the fact that the wage

rate in Thailand is likely to be lower than marginal-value product

because of the monopolistic position of employers possibly suggests a

partial backward shifting of the tax. Taking into account these two

institutional factors suggests the possibility that part of the business

tax rests on businesses who are not successful in tax evasion. Alter-

natively, since oligopolists in the wholesale market probably have already

maximized joint profits, it is possible that part of the business tax

will be absorbed by businesses by the reduction in excess profits. But

since there are no empirical studies about elasticity of demand and

supply of products as well as factors, it is an assumption and not a

conclusion that the business tax burden in Thailand is shared by con-

sumers, factors, and business owners. However, as stated in Chapter II,

about half of the business tax revenue is collected from imports, the

burden of this portion of the tax should be considered along with the

shifting incidence of import duties, because the business tax on imports

will affect the imports that are taxed. The other half of business tax

is assumbed to be borne by consumers, factors and business owners in equal

proportions of one-third. Since import duties are assumed to be shifted

fully forward to the consumers (justification will be made later), the

overall assumption of business tax burden is that the consumers, laborers,

and the business owners bear the tax in the ratio of two-thirds, one-sixth

and one-sixth, respectively. This ratio, though arbitrary, seems to

conform with the observed behavior of business in Thailand.

Allocation of the forward-shifted portion of the tax is made according to expenditure distribution. Since business tax is classified by type of commodities, activities and services, a matching of the tax with type of expenditures is made (see Appendix G, for expenditures distribution). The backward-shifted part of the tax is allocated among lower income classes (under ฿ 24,000), since there is no distribution of labor income available. The third of the tax that is assumed to be borne by business owners is allocated to classes of money income of ฿ 24,000 and over.

Stamp Tax

This tax is collected for documents such as checks, letters of credit, leases of buildings or land, transfers of stock, etc. Given the nature of this transaction and the fact that stamp tax value is negligible compared to the value of transaction, it is reasonable to assume that the tax is not shifted. Since those who engage in the transactions subject to tax are likely to be concentrated in the middle and higher income classes, 70% of stam tax is allocated to classes of ฿ 24,000 and over; the rest is allocated according to income over the entire range of money income distribution.

Selective Sales Taxes

Selective sales taxes in Thailand are imposed on a few products as shown in Appendix F. Demand for these products is expected to be highly inelastic because they are considered as necessities by some income groups in Thailand. Granted this assumption, it is reasonable to assume that the

selective sales taxes are fully forward-shifted to consumers. Allocation

of these taxes then follows the expenditure distribution.

Import Duties

Import duties, the largest single source of government tax revenue,

are likely to be fully forward-shifted to consumers for the following

reasons:[20]

(1) Reports from many newspapers in Thailand have revealed that

increase of tariff rates for 216 main items in July, 1970 resulted in

proportional price increase for those products. Some prices were reported

to be increased more than the increase in taxes.

(2) Less competition from domestic products since few categories of

domestic products are available to compete with imports. Moreover, the

prices of those domestic prdocuts are always set close to the prices of

similar imports.

(3) The chances of tax evasion are slim, since import duties are

collected at the port of entry. Thus it is unlikely that an importer will

not raise prices to cover the taxes.

Taking into consideration the reasons given above, it is reasonable

to assume that import duties are fully forward-shifted to consumers in

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[20]It should be noted that there are also several reasons to believe
that import duties of Thailand might be absorbed partly by producers or
partly backward-shifted to workers. First, it is possible that import
duties on producers' goods might not be passed on to consumers since export
prices are determined by the world market. Moreover, competition in the
domestic market for finished products may prevent a full forward-shifting
of the taxes. Second, a discussion paper titled "A Study of Import Demand
Equation for Thailand" by Jinachitra, Sataport (Bank of Thailand, 1975)
revealed that demand elasticity of import of Thailand was about unitary
(1.02). However, since detail of Janachitra's study is not available, it
is difficult to judge the validity of this study. Given the limitation of
time and information, the shifting assumption as to import duties of Thai-
land will follow the reasons given in the text.

terms of higher prices. Since import duties are a consumption tax, they should be allocated according to the distribution of consumption expenditures.[21]

Rice Premium

The rice premium is a tax on permits for rice exporting. Numerous studies have shown that the burden of the rice premium is likely to be borne by the farmers of Thailand.[22] This study, therefore, assumes that it is fully backward-shifted to farmers, and the tax burden is allocated according to money income distribution of rural households.

However, the rice premium should not be viewed as entirely burdensome to farmers; it also benefits consumers, including a large number of farmers who have to buy rice for their own consumption, by reducing the domestic price of rice. If there were no rice premium, more rice exports and higher domestic prices of rice would be expected as long as the world market price of rice is higher than the domestic price. Therefore, this effect of consumer subsidy reduces the net burden of farmers to a certain extent.

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[21]Expenditure distributive series, as shown in Appendix G, are far from satisfactory for allocating such major taxes as business taxes on imports and import duties. Since this series includes expenditures on domestic products as well as imports, and since there is no expenditure distribution distinguishing between luxuries and necessities, it is possible that the allocation of such taxes on the basis of expenditure series (Appendix G) tends to overstate the regressivity of the taxes because a relatively large portion of imports seems to be consumed by middle-rich income classes.

[22]See for example Samittanon, Sura Thailand's Rice Export Tax: Its Effects on the Rice Economy (Bangkok: National Institute of Development Administration, 1967); Edward, Von Roy, "The Pursuit of Growth and Stability Through Taxation of AGricultural Exports: Thailand Experience" Public Finance, 1968; Dan Usher "The Economics of Rice Premium: Preliminary" (Bank of Thailand, Undated).

Export Duties

Since import duties are assumed to be fully forward-shifted to con-
sumers of taxed products, by symmetry export duties should also be fully
forward-shifted to consumers in the foreign countries. However, this does
not follow because Thai exports comprise only a small share of exports
and world demand for them is believed to be fairly elastic. Kerdpibul,
Udom[23] estimates that the elasticity of world demand for Thai exports is
1.7 and Akrasenee, Narongchai[24] estimates it at 2 to 3. Therefore, for-
ward shifting of the taxes to foreign consumers seems to be unlikely.
Moreover, since Thai exporters are not producers but are believed to have
some monopsony power in setting prices for domestic producers (the rice
market is an example), it is reasonable to assume that export duties are
fully backward-shifted to the producers of taxed products.

Since most Thai exports are agricultural products, export duties
are allocated according to rural income distribution.

Empirical Results of Thailand Tax Incidence Analysis

Based on the tax incidence assumptions and allocation patterns given
in the last section, the tax burden distribution by type of tax and income
class is presented in Tables IV-9 and IV-10, for 1969 and 1971, respectively.
The effective tax rates by type of tax and income class are then calculated

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[23]"Trends in Manufactured Exports in South East Asia Countries,
Development Economics Staff Working Papers No. 139, I.B.R.D. (Washington,
D.C., January, 1973).

[24]"The Manufacturing Sector in Thailand: A Study of Growth, Import
Substitution and Effective Protection, 1960-1969," (Ph.D. dissertation,
Johns Hopkins University, 1973.

Table IV-9

Distribution of Absolute Tax Burden by Income Class, 1969

(Millions of Baht)

Income Class	Personal Income Tax	Property Taxes	Corporation Tax	General Sales Taxes	Selective Sales Taxes	Import Duties	Rice Premium & Export Duties	Total Taxes
Lower than 3,000	–	8.3	37.2	149.3	146.2	300.0	99.6	740.6
3,000 – 5,999	–	15.6	77.5	311.9	264.7	559.2	225.7	1,454.6
6,000 – 8,999	–	17.4	86.6	346.3	309.5	635.6	252.3	1,647.7
9,000 – 11,999	60.7	14.4	76.0	306.1	261.9	552.9	202.5	1,474.5
12,000 – 14,999	65.7	13.8	68.7	275.6	242.1	504.9	167.7	1,338.5
15,000 – 17,999	–	10.9	56.0	225.1	198.6	380.7	129.5	1,000.8
18,000 – 23,999	97.7	14.2	68.8	275.0	227.0	470.0	106.2	1,258.9
24,000 – 29,999	–	27.7	74.6	314.0	200.0	425.5	109.6	1,151.4
30,000 – 35,999	74.9	32.9	91.0	384.0	218.9	472.1	184.2	1,458.0
36,000 – 47,999	57.7	22.0	59.3	249.4	129.9	286.0	78.0	882.3
48,000 – 59.999	49.1	19.8	53.8	226.7	116.3	258.9	78.0	802.6
60,000 and over	713.7	38.9	101.6	427.0	205.9	454.9	26.6	1,968.6
All Classes	1,119.5	235.9	851.1	3,490.4	2,521.0	5,300.7	1,659.9	15,178.5

Table IV-10

Distribution of Absolute Tax Burden by Income Class, 1971

(Millions of Baht)

Income Class	Personal Income Tax	Property Taxes	Corporation Tax	General Sales Taxes	Selective Sales Taxes	Import Duties	Rice Premium & Export Duties	Total Taxes
Lower than 3,000	–	9.7	35.3	147.5	189.6	298.6	26.1	706.8
3,000 – 5,999	–	18.8	83.0	345.7	344.8	554.3	59.1	1,405.7
6,000 – 8,999	–	21.2	95.7	398.6	403.1	623.6	66.1	1,608.3
9,000 – 11,999	–	17.5	82.3	343.3	342.3	543.7	53.0	1,382.1
12,000 – 14,999	–	17.3	84.2	350.5	315.4	494.8	43.9	1,306.1
15,000 – 17,999	–	13.6	66.1	275.4	258.0	375.5	33.9	1,022.5
18,000 – 23,999	59.2	17.6	82.2	341.1	295.3	461.1	27.8	1,284.3
24,000 – 29,999	80.1	42.9	85.8	372.5	260.9	415.5	28.7	1,286.4
30,000 – 35,999	–	56.6	114.0	496.8	285.8	459.4	48.2	1,460.8
36,000 – 47,999	115.9	33.0	64.7	282.8	170.1	277.3	20.4	964.2
48,000 – 59,999	87.4	32.1	63.5	275.7	153.2	249.6	20.4	881.9
60,000 and over	1,060.7	52.3	98.9	429.8	271.2	435.7	7.0	2,355.6
All Classes	1,403.3	332.6	955.7	4,059.7	3,289.7	5,189.1	434.6	15,664.7

using two income concepts, household income (Y_t) and adjusted household

income (Y_{t2}). The results of the calculations are shown in Tables IV-11

and IV-12 for 1969, and Tables IV-13 and IV-14 for 1971.

It should be noted at the outset that money income distribution

in 1971 is derived, by way of extrapolation, from 1963 and 1969 money

income data (see Table IV-12). Any conclusions, therefore, as to the

result of tax incidence in 1971 depends upon the formation of 1971 money

income data. Based on the household income concept, the effective tax

rates in Table IV-13 reveal that the 1971 personal income tax was

progressive at the lower and upper ends of the income scale and regres-

sive at the income brackets ฿ 48,000-59,999. This seeming anamoly is

due to the imperfection of the distribution of personal income tax data

(see p. 78). Property taxes showed step progression throughout the

income scale. The corporation tax was progressive from the lower end of

the income scale, was proportional at the income bracket ฿ 9,000-30,000,

and became regressive thereafter. However, other taxes -- general sales

taxes, selective sales taxes, import duties, and rice premium and export

duties -- all showed a progressive trend from the lower end of the income

scale but became regressive around the middle income classes (฿ 12,000-

29,999). Effective tax rates for all taxes combined showed a progressive

trend from the lower end of the income scale up to income bracket ฿ 9,000-

11,999, were proportional for income bracket ฿ 12,000-17,000, and fluctu-

ated thereafter (see Figure II). This fluctuation might be due to (i)

the discontinuity of the personal income tax distribution, which is

the result of the conversion of the tax data distributed by taxable

income class to a tax distribution by adjusted gross income class

Table IV-11

Effective Tax Rates Based on Household Income by Income Class, 1969

(Percentage)

Income Class	Personal Income Tax	Property Taxes	Corporation Tax	General Sales Taxes	Selective Sales Taxes	Import Duties	Rice Premium & Export Duties	Total Taxes
Lower than 3,000	–	0.1	0.6	2.8	2.3	4.7	1.6	12.1
3,000 – 5,999	–	0.2	0.9	4.0	3.1	6.5	2.6	17.3
6,000 – 8,999	–	0.2	1.0	4.5	3.7	7.6	3.0	20.0
9,000 – 11,999	0.9	0.2	1.1	4.9	3.9	8.2	3.0	22.3
12,000 – 14,999	1.1	0.2	1.2	5.1	4.1	8.5	2.8	23.0
15,000 – 17,999	–	0.2	1.1	4.9	4.0	7.8	2.6	20.7
18,000 – 23,999	1.6	0.2	1.2	4.9	3.8	8.0	1.8	21.6
24,000 – 29,999	–	0.5	1.4	5.7	3.8	8.1	2.1	21.7
30,000 – 35,999	1.1	0.5	1.4	5.2	3.3	7.1	2.8	21.4
36,000 – 47,999	1.3	0.5	1.4	4.9	3.0	6.5	1.8	19.4
48,000 – 59,999	1.2	0.5	1.3	4.8	2.9	6.4	1.9	19.1
60,000 and over	9.2	0.5	1.3	4.6	2.7	5.9	0.3	24.6
All Classes	1.5	0.3	1.1	4.7	3.4	7.1	2.2	20.3

Table IV-12

Effective Tax Rates Based on Adjusted Household Income by Income Class, 1969

(Percentage)

Income Class	Personal Income Tax	Property Taxes	Corporation Tax	General Sales Taxes	Selective Sales Taxes	Import Duties	Rice Premium & Export Duties	Total Taxes
Lower than 3,000	-	0.1	0.5	2.3	1.8	3.7	1.2	9.6
3,000 - 5,999	-	0.1	0.6	2.9	2.2	4.7	1.9	12.5
6,000 - 8,999	-	0.1	0.7	3.1	2.6	5.3	2.1	13.9
9,000 - 11,999	0.6	0.1	0.8	3.3	2.6	5.5	2.0	15.0
12,000 - 14,999	0.7	0.1	0.8	3.4	2.7	5.7	1.9	15.3
15,000 - 17,999	-	0.1	0.8	3.3	2.7	5.2	1.8	13.9
18,000 - 23,999	1.1	0.2	0.8	3.3	2.6	5.3	1.2	14.4
24,000 - 29,999	-	0.3	0.8	3.1	2.1	4.4	1.1	11.9
30,000 - 35,999	0.6	0.3	0.8	2.9	1.8	3.9	1.5	11.9
36,000 - 47,999	0.7	0.3	0.7	2.8	1.6	3.6	1.0	10.8
48,000 - 59,999	0.7	0.3	0.7	2.7	1.6	3.6	1.1	10.7
60,000 and over	5.2	0.3	0.7	2.6	1.5	3.3	0.2	13.8
All Classes	1.0	0.2	0.7	3.0	2.1	4.5	1.4	12.9

Table IV-13

Effective Tax Rates Based on Household Income by Income Class, 1971

(Percentage)

Income Class	Personal Income Tax	Property Taxes	Corporation Tax	General Sales Taxes	Selective Sales Taxes	Import Duties	Rice Premium & Export Duties	Total Taxes
Lower than 3,000	–	0.2	0.6	3.3	3.2	5.0	0.4	12.7
3,000 – 5,999	–	0.2	0.9	4.4	3.8	6.1	0.6	16.1
6,000 – 8,999	–	0.2	1.0	4.6	4.3	6.6	0.7	17.5
9,000 – 11,999	–	0.2	1.1	5.2	4.7	7.4	0.7	19.4
12,000 – 14,999	–	0.2	1.1	4.7	4.0	6.4	0.6	17.0
15,000 – 17,999	–	0.2	1.1	4.7	4.2	6.2	0.5	17.0
18,000 – 23,999	0.8	0.2	1.1	4.7	3.9	6.1	0.4	17.3
24,000 – 29,999	1.0	0.5	1.1	4.4	3.3	5.3	0.4	16.0
30,000 – 35,999	–	0.5	1.0	3.8	2.5	4.1	0.4	12.4
36,000 – 47,999	1.8	0.5	1.0	4.0	2.7	4.4	0.3	14.9
48,000 – 59,999	1.4	0.5	1.0	3.7	2.4	4.0	0.3	13.3
60,000 and over	11.1	0.5	1.0	4.0	2.8	4.6	0.1	24.1
All Classes	1.5	0.4	1.0	4.3	3.5	5.5	0.5	16.6

Table IV-14

Effective Tax Rates Based on Adjusted Household Income by Income Class, 1971

(Percentage)

Income Class	Personal Income Tax	Property Taxes	Corporation Tax	General Sales Taxes	Selective Sales Taxes	Import Duties	Rice Premium & Export Duties	Total Taxes
Lower than 3,000	–	0.1	0.5	2.7	2.6	4.1	0.4	10.5
3,000 – 5,999	–	0.1	0.7	3.4	2.9	4.7	0.5	12.4
6,000 – 8,999	–	0.2	0.8	3.5	3.2	5.0	0.5	13.2
9,000 – 11,999	–	0.2	0.8	3.8	3.4	5.4	0.5	14.2
12,000 – 14,999	–	0.2	0.8	3.5	3.0	4.7	0.4	12.6
15,000 – 17,999	–	0.2	0.8	3.5	3.1	4.6	0.4	12.6
18,000 – 23,999	0.6	0.2	0.8	3.5	2.9	4.6	0.3	12.8
24,000 – 29,999	0.7	0.3	C.7	2.9	2.2	3.5	0.2	10.6
30,000 – 35,999	–	0.3	C.7	2.6	1.7	2.7	0.3	8.3
36,000 – 47,999	1.2	0.3	0.7	2.7	1.8	3.0	0.2	10.0
48,000 – 59,999	0.9	0.3	0.7	2.5	1.6	2.7	0.2	9.0
60,000 and over	7.4	0.4	0.7	2.6	1.9	3.0	0.1	16.1
All Classes	1.1	0.3	0.7	3.1	2.5	3.9	0.3	11.9

Figure I. Effective Tax Rates by Income Class, 1969
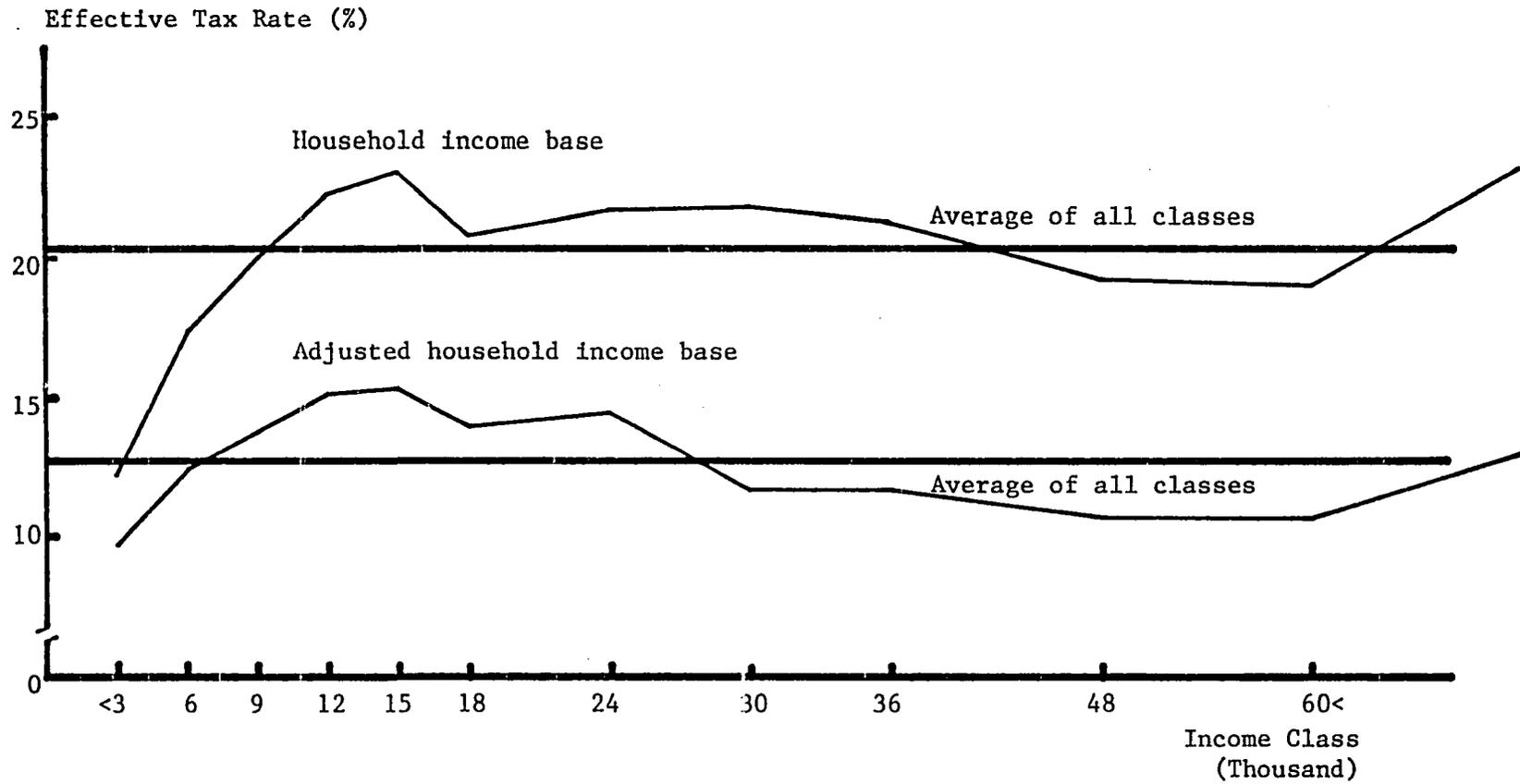
Effective Tax Rate (%)

Figure II. Effective Tax Rates by Income Class, 1971

Effective Tax Rate (%)
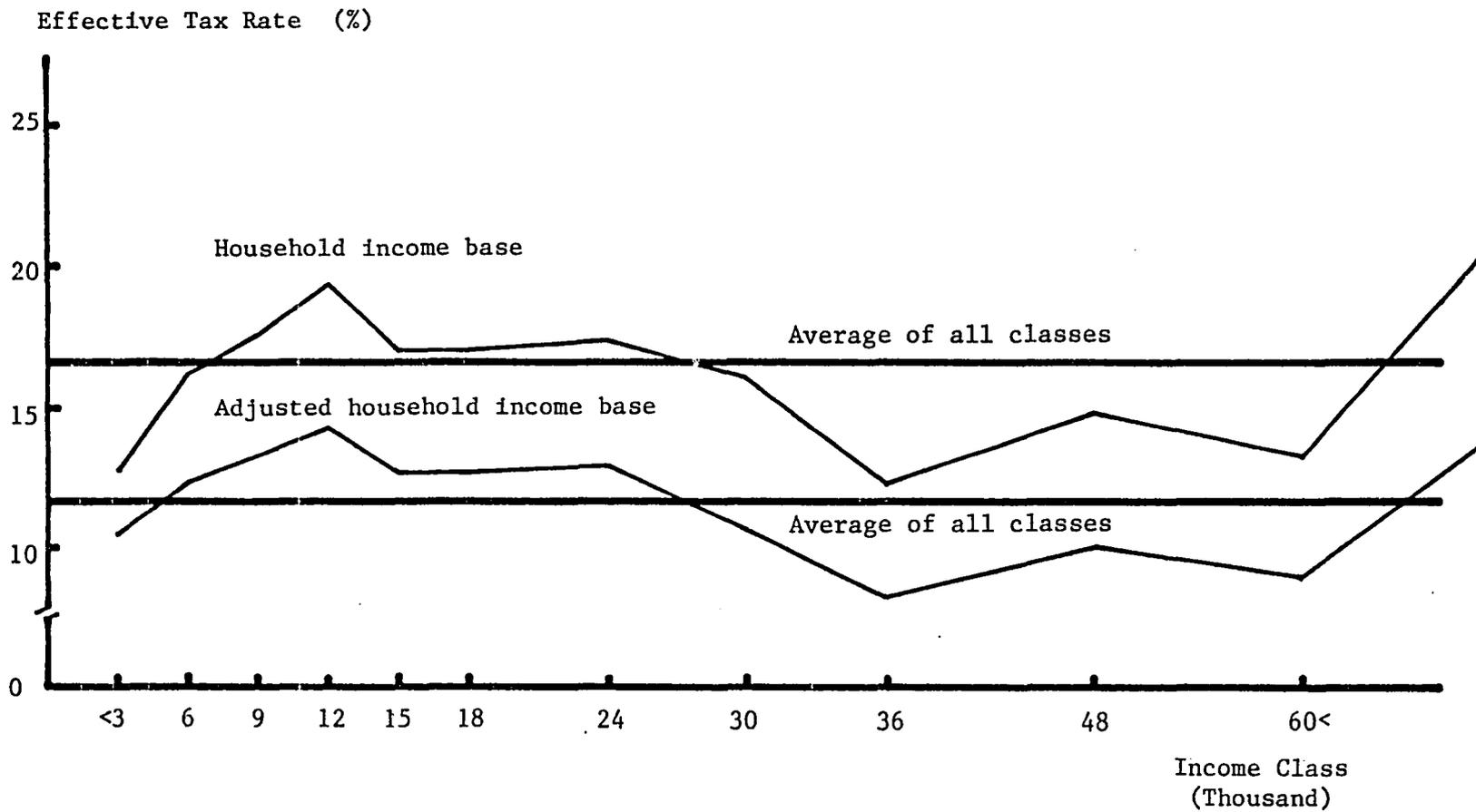
(see p. 79). (ii) the result of merging rural and urban data on number

of households and money income to derive the national household and mone-

income data. However, such a fluctuation was also found in the tax

incidence analysis of many developing countries including Columbia,

Jamaica, and the Philippines.[25] It is conceivable that with the

fluctuation of effective tax rates, the conclusion as to the gressivity

of the tax structure cannot be easily drawn, unless a special technique

of measurement is introduced. This technique of measurement as well as

the conclusion of tax gressivity will be presented in the next section.

Table IV-13 also reveals that the effective tax rate for all taxes

combined for all income classes, which was calculated at 16.6% of total

household income in 1971, is considered as tax burden under "proportional

income tax" for each income bracket, i.e., the ratio applicable to the

group as a whole. It is clear that the lowest two income classes and

the classes of ₿ 24,000 and over, except the highest income class, had

relatively low effective tax rates compared to the effective tax rate

under proportional income tax. This implies that the poor and the

lower-middle income classes bear a relatively heavier tax burden than

the middle and middle-rich income classes (see also Fig. II).

When adjusted household income is used as the base (Table IV-14),

the effective tax rates for individual taxes and for all taxes combined

for all income classes exhibited a similar trend as in the case of using

the household income base. The same conclusion as to the distribution

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[25]Luc De Wulf, "Fiscal Incidence Studies in Developing Countries:
Survey and Critique," IMF Staff Papers, Vol. 22 (March, 1975). Table 1.

of tax burden among different income classes in 1971 can also be drawn

for the adjusted household income base as for the household income

base (see Fig. II).

The gressivity of taxes and the tax burden distribution among

income classes in 1969 are shown in Tables IV-11 and IV-12 for house-

hold income base and for adjusted household income base respectively.

It is noticable that the effective tax rates in 1971 were relatively

more regressive than in 1969 for both income bases. As to the

tax burden distribution, it is revealed that for adjusted household

income base, the resulting tax burden distribution, the array of

effective tax rates as compared to the effective tax rate under propor-

tional income tax, was the same for 1969 as for 1971. However, a

different result is shown when household income base is used in 1969.

It is clear from Table IV-11 that the effective tax rates for the

lowest three income classes and for the income classes ฿ 36,000-59,999

are lower than the effective tax rate under proportional income tax,

which was calculated at 20.3%. This implies that the poor, the

lower-millde, and the middle income classes bear more tax burden

than the upper-middle income classes (see Fig. I).

Income Distribution and Gressivity of Tax Structure

Income Distribution

To portray income distributuin, economists commonly resort

to the graphical technique of the Lorenz curve (see Appendix I).[26]

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[26]See M.O. Lorenz, "Method for Measuring Concentration of Wealth"
Journal of the American Statistical Association, (June, 1905), pp. 209-219.

However, even thought the curve is useful and capable of exhibiting the extent of income inequality, it is not easy in practice to compare in a simple way the distributions for different years if the curves happen to cross each other. There is no way of knowing, in this case, in which year the income distribution is more equal.

To overcome this problem, the so-called Gini concentration ratio or Gini coefficient[27] is used by most economists (see Appendix I). First, it solves the problem of cross-overs since the Gini coefficient is always a single numerical value, year-to-year comparisons can readily be made. Second, since the value of the Gini coefficient is expressed numerically, it is more precise in telling how high or low the inequality of income distribution is.

Table IV-15

Measurement of Thai Income

Distribution by Different Income Bases, 1969 and 1971

Income Base	Gini Coefficient	
	1969	1971
Money Income	0.5287	0.5889
Household Income	0.4286	0.5021
Adjusted Household Income	0.4861	0.5343

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[27]See C. Gini, "Measurement of Inequality in Income," _Economic Journal_, (1921). See also "On the Measure of Concentration with Especial Reference to Income and Wealth," paper delivered before the Cowless Commission in 1936.

To measure income distribution, the Gini coefficient is employed in this study. However, as stated previously, different income bases can result in different income distribution patterns. This is confirmed by Gini coefficients using different income bases as shown in Table IV-15. Considering the values shown in Table IV-15, it is clear that the income distribution of Thailand in 1969 and 1971 is highly unequal, comparable to that of South Korea (0.36 in 1970), Pakistan (0.33 in 1970-71), Sri Lanka (0.34 in 1970), and the Philippines (0.49 in 1971).[28] Increasingly great income inequality results when money income, adjusted household income, and household income are respectively used in computing the Gini coefficient. This is because money income excludes income in kind which constitutes a substantial proportion of the income of the lower income classes relative to higher income classes (see Table IV-3). Exclusion of income in kind thus tends to over-state income inequality as evidenced by the reduction of the Gini coefficient when switching from money income to household income: from 0.53 to 0.43 in 1969 and from 0.59 to 0.50 in 1971. The increase in the Gini coefficient value when switching from a household income base to an adjusted household income base can be explained by the fact that those components added to household income to derive adjusted household income are distributed more favorably to the higher income classes relatively to the lower income classes.

The question is which Gini coefficient is closest to reality.

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[28]Japan Economic Research Center and the Council for Asian Manpower studies, Income Distribution, Employment and Economic Development in Southeast and East Asia, paper and proceedings of the Seminar (Tokyo, Japan, 1974), Table 1, p. 304.

Obviously, Gini coefficients derived from both household income and adjusted household income bases are preferable to that derived from money income bases because the first two income bases are more inclusive. However, since the adjusted household income base is more comprehensive than the household income base, a Gini coefficient derived from the former income base is preferable.

An interesting result observed in Table IV-15 is that the income distribution of Thailand became more unequal despite a marked increase in national income from 104,504 million baht in 1969 to 117,987 million baht in 1971, a growth rate of 6% annually. This outcome seems to imply that the economic development strategy of Thailand has emphasized the rapid growth of the country at the expense of income distribution. A wider gap between income classes in the future may be anticipated unless changes are made in the economic development policies of Thailand.

Gressivity of Thai Tax Structure

Generally, the state of income distribution of a country is related ot its tax structure. Given the effect of government expenditure programs, highly progressive tax structures would result in relatively low inequality of income distribution. Contrariwise, highly regressive tax structure tends to increase income inequality. In the case of Thailand, as stated in the last section, the tax structure, represented by the effective tax rates of all taxes combined, exhibits fluctuation of gressivity at the higher income brackets. This creates difficulty in drawing a conclusion as to the gressivity of the tax structure in Thailand. Fortunately, it was found by Professor Daniel B. Suits that the

technique of measuring income inequality (Gini coefficient technique)
can be adopted to measure the trend of the tax.[29] This modified tech-
nqiue is quite similar to the Gini coefficient except that the cumulative
percentage of households is replaced by the cumulative percentage of
effective tax rates (see Appendix I. Figure I-1). The modified Lorenz
curve is shown in Figure III.

From origin A, the vertical axis measures the cumulative percentage
of effective tax rates and the horizontal axis measures the cumulative
percentage of income (the same income concept used in calculating effec-
tive tax rates). The diagonal straight line across Figure III can be
called the "proportional tax line" since each point on this line repre-
sents equal percentages of tax rate and income. The curve that is convex
to the lower right hand corner can be called the "progressive tax curve"
since, moving up the income scale, the tax rate increases less than
income. If the origin is switched from A to B, reversing the direction
of measurement, the curve that is convex to B origin can be called the
"regressive tax curve" since moving up the income scale is accompanied
by a decreasing effective tax rate.

In statistical measurement, this technique employs a formula similar
to that of the Gini coefficient. The coefficient derived from this
technique will be called the "S-coefficient."

[29]"Measurement of Tax Progressivity," American Economic Review,
(September, 1977), pp. 271-279.

Figure III

Modified Lorenz Curve
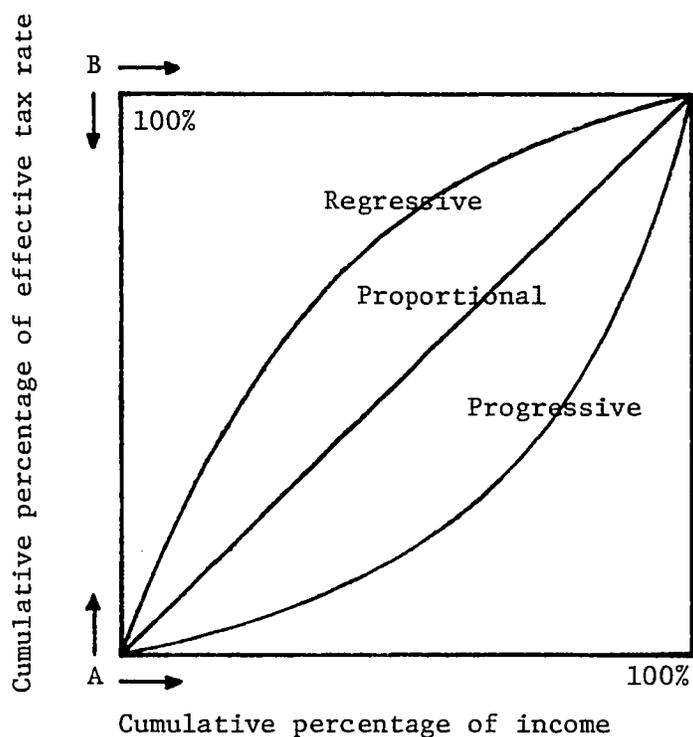
Let S = Index of tax progressivity

X = Cumulative percentage of income

Y = Cumulative percentage of effective tax rates

Thus $S = 1 - \sum_{i=1}^{} (X_i - X_{i-1})(Y_i + Y_{i-1})$

Where $-1 \leq S \geq +1$

A negative value of the S-coefficient indicates tax regressivity and a positive value of the S-coefficient indicates tax progressivity. A zero value indicates a proportional tax.

It must be mentioned at this point that the usefulness of the

S-coefficient is not without limitation. As shown in Figure 2, the 1971 tax structure of Thailand, using adjusted household income base, was progressive from the lower income class, was approximately proportional around lower-middle income classes, and became regressive until reaching the top income, then turned out to be progressive thereafter. Since the S-coefficient is a single-value measure of average gressivity of tax system across the entire income scale, information as to what range of income is progressive and what range is regressive can not be inferred from it. However, even though the S-coefficient technique tends to over-simplify the complex curvilinear functions as in the case of Thailand, it still is a useful device in judging the gressivity of the overall tax structure of Thailand.

Table IV-16 shows the gressivity of each tax and all taxes combined, employing the above technique. It is clear from this table that the overall tax structure of Thailand for 1971 was mildly progressive (S = 0.007) using the household income base. This reflects the fact that the progressivity of some taxes at the lower and upper end of the income scale outweighs elements of regressivity in the upper income scale. However, when adjusted household income is used, the 1971 overall tax structure is shown to be slightly regressive (S = 0.063) reflecting the fact that the broad base income increases the incomes of the upper income class relatively more than those of the lower income class. Thus, the effects are to reduce the progressivity of some taxes and increase the regressivity of other taxes.

A closer look at individual taxes for 1971 showed that, with household income as the base, the most progressive taxes were respectively

Table IV-16

S-Coefficient Showing Gressivity of Thai Tax Structure

by Type and by Income Base,

1969 & 1971

| Taxes | S-Coefficient | | | | |
| | Household Income Base | | Adj. Household Income Base | | U.S. |
	1969	1971	1969	1971	1970
Personal Income Tax	0.632	0.766	0.517	0.743	0.19
Property Taxes	0.303	0.219	0.225	0.150	0.18
Corporation Tax	0.160	0.021	0.025	-0.040	0.32
General Sales Taxes	0.110	-0.028	-0.011	-0.098	-0.15
Selective Sales Taxes	0.056	-0.076	-0.070	-0.158	
Import Duties	0.066	-0.087	-0.061	-0.154	–
Rice Premium and Export Duties	-0.030	-0.180	-0.154	-0.250	–
All Taxes	0.113	0.007	-0.010	-0.063	0.070

Note: The S-coefficients for U.S. are from Danaie B. Suits, Ibid., p. 277, Table 2.

personal income tax (0.766), property taxes (0.219), and corporation

tax (0.021); and the most regressive taxes were respectively rice pre-

mium and export duties (-0.180), import duties (-0.087), selective

sales taxes (-0.076), and general sales taxes (-0.028). Changing the

income base to adjusted household income reduces the progressivity of

those taxes which are progressive, noticably, the corporation tax

becomes regressive, and increases the regressivity of those taxes which

are regressive. This makes the overall tax structure in 1971 slightly

regressive. It should be noted that personal income tax shows an unus-

ually high value for both income bases. This should be attributed partly

to the discontinuity of the personal income tax data, and partly to

the fact that most of the tax is concentrated at the highest income class.

However, since personal income tax carries little weight (less than 10%)

in the total picture, the effect on the gressivity of the overall tax

structure is likely to be negligible.

The overall tax structure in 1969 showed a pattern similar to that

of 1971, but differed in the magnitude of gressivity. With the house-

hold income base, the 1969 overall tax structure was somewhat progressive

(0.113), and became slightly regressive with the adjusted household

income. For individual taxes, a similar gressivity was found between

1969 and 1971 with the adjusted household income base, showing a shift

towards more regressive in 1971. Using the household income base, some

taxes in 1969 (general sales taxes, selective sales taxes, and import

duties) showed an unusual progressive sign whereas the problem did not

show up in 1971 with the same income base. However, this problem can be

explained by referring to the nature of the S-coefficient measurement,

since the S-coefficient of a tax is not only affected by the trend of tax gressivity, but is also affected by the initial income distribution. Given the trend of effective tax rates, the less unequally income is distributed, the less regressive it becomes.[30] This reasoning is evidenced by a considerably less unequal income distribution in 1969 (0.4286) than in 1971 (0.5021) as shown in Table IV-15.

S-coefficients for the U.S. (1970) and Thailand (1971) are compared in Table IV-16. Since the S-coefficients are calculated on an income base similar to the adjusted household income of this study, comparison will be made under this income concept. It is apparent that both the Thai and U.S. overall tax structure approaches a proportional tax, but from different directions. Except for the personal income tax and property taxes, the gressivity of other individual taxes is not significantly different for both countries. The differing tax gressivity of the corporation tax for Thailand and the U.S. is due to differences in the shifting assumption of the tax (corporation tax for the U.S. was assumed to be borne by capital income only).

Up to this point it is clear from the S-coefficient that the overall tax structure in 1969 was more progressive than in 1971 with the household income base, and less regressive with the adjusted household income base. With this evidence one could conclude that in 1969 the Thai tax structure, overall, either slightly reduced income inequality relatively more than in 1971 (based on household income calculations) or slightly increased income inequality relatively less than in 1971 (by

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[30]Suits, p. 276.

the adjusted household income calculations). This conclusion is borne

out by comparing the measurement of the Gini coefficient before tax

income distribution and after tax income distribution as shown in Table

IV-17.

Table IV-17 indicates that with the household income base, the

overall tax structure of Thailand decreased income inequality by 4.4%

in 1969 and by 0.6% in 1971; with the adjusted household income base, the

overall tax structure in 1969 increased income inequality by 0.1% and

in 1971 by 0.5%. It is therefore clear that the results are consistent

with the S-coefficient results.[31]

In conclusion the overall tax structure in 1969 and 1971 (using

calculations of taxes as a ratio of adjusted household incomes) seems to

be consistent with the hypothesis of this study that the poor Thai

people bear more of a tax burden than the middle and the middle-rich

income classes. This is because most of the taxes exhibit a regressive

trend between the next-to-lowest income bracket up the income ladder

until the top bracket. A somewhat similar trend is seen when applying

household income as the income base.

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[31]Analysis of the gressivity of Thai tax structure has been made
using the household and adjusted household income concepts. An alterna-
tive concept of income is "permanent income" which is determined by the
expected income to be received by a household over a long period of time.
Since the time series data necessary for computing permanent income are
not available, this concept of income had to be ruled out for application
here. However, as a generalization, if it is assumed that the distribu-
tion of permanent income is less unequal relative to the 1971 household
income, less regressivity of the overall Thai tax structure, as measured
by S-coefficient technique, would be expected. The opposite result will
be obtained if the distribution of permanent income is assumed to be
more unequal relative to 1971 household income distribution.

Table IV-17

Gini-Coefficients for Distribution of Income

Before and After Taxes, 1969 and 1971

	Gini Coefficient		Percentage Change
	Before-tax Income Distribution	After-tax Income Distribution	in Income Inequality
1969			
Household Income	0.4286	0.4097	-4.4
Adjusted Household Income	0.4873	0.4879	+0.1
1971			
Household Income	0.5021	0.4992	-0.6
Adjusted Household Income	0.5316	0.5343	+0.5

Note: A negative percentage change of income inequality implies a reduction in income inequality whereas a positive change implies a reverse situation.

As to the progressivity of Thailand's tax structure, it is clear that it depends on the choice of income base. With a somewhat narrow household income concept, the overall tax structure of Thailand in 1969 as well as in 1971 was slightly progressive, with the 1969 tax structure more progressive than in 1971. Using a more comprehensive adjusted household income base turns the overall tax structure of Thailand slightly regressive for both years, but the regressivity is more pronounced in 1971 than in 1969. However, since the overall tax structure in both years on either basis of calculation was only slightly different from proportional, it cannot be expected that it caused much change in income distribution in those years. One may conclude that under this existing revenue structure, taxes are not an effective means of redistributing income in Thailand.

CHAPTER V.

SUMMARY: CONCLUSIONS AND RECOMMENDATIONS

Summary

       There were three previous studies on the tax incidence of Thailand

for the year 1969. For convenience in comparing these three studies

with this present analysis, Table V. provides a summary table showing

the different features of taxes included in the study, income base used,

tax incidence assumptions, and result of the tax gressivity of each

study. The first study (abbreviated "A"), conducted in 1974, included

all taxes as well as fees and permits. The income concept used was

money income plus income in kind (Y_t). Employing standard assumptions

(except for the corporation tax) as to the shifting and incidence of

taxes, i.e., all direct taxes were not shifted, and all indirect taxes

were fully forward-shifted, the Tahi tax structure was found to be _mildly_

progressive. The second study (abbreviated "T"), conducted in 1974,

included only some major taxes. Three concepts of income were used

including money income (Y_m), money income plus income in kind (Y_t), and

Y_t plus rice premium (Y_{t1}). Using the same assumptions as to the shift-

ing and incidence of taxes, the overall tax structure of Tahiland was

said to exhibit a _regressive_ trend for all income bases. The third

study (abbreviated "K"), conducted recently (1976), also employed the

standard assumptions of taxes shifting. All government revenues, includ-

ing taxes, fees, and permits, were included in the study, and two income

concepts, money income (Y_m) and adjusted income (Y_{t2}), were employed.

Adjusted income was defined to include money income, income in kind,

Table V

Comparison of Various Tax Incidence Analysis

of Thailand, 1969

Elements, Assumptions, Conclusions	Researchers			
	A	T	K	P
1. Taxes Included				
Some major taxes		X		
All taxes including local taxes				X
Taxes (except local taxes), fees permits	X		X	
2. Income Base				
Money income		X	X	
Household income (money income plus income in kind)	X	X		X
Adjusted Income (money income plus income in kind, adjusted in imputed rent, adjustments in under-reported income, net corporated retained earnings, and indirect taxes)			X	
Adjusted household income (money income plus income in kind, under reported income adjusted, corporation tax, net corporate retained earnings, and indirect taxes)				X
3. Tax Incidence Assumptions				
Personal income tax				
To taxpayers	X	X	X	X
Property taxes				
Automobile and property registration fees	X		X	
To consumers	X		X	
House and land tax				X
To tenants				X
Land development tax				X
To land owners				X

Table V (continued)

Elements, Assumptions, Conclusions	Researchers			
	A	T	K	P
Corporation tax				
To consumers			X	
One-third to consumers, one-third to capital owners, and one-third to workers	X			X
Business tax				
To consumers	X	X	X	
One-sixth to capital owners, one-sixth to workers, and two-thirds to consumers				X
Stamp tax				
To consumers	X	X	X	X
Selective sales taxes				
To consumers	X	X	X	X
Import duties				
To consumers	X	X	X	X
Rice premium				
To farmers		X	X	X
Export duties				
To farmers		X	X	X
Fees, permits, charges				
To consumers	X		X	

4. Gressivity of Tax Structure

    Based on money income

	A	T	K	P
Regressive		X		
Slightly regressive			X	

    Based on household income

	A	T	K	P
Mildly progressive	X			
Mildly progressive (S=0.113)				X
Regressive		X		

Table V (continued)

Elements, Assumptions, Conclusions	Researchers			
	A	T	K	P
Based on adjusted income				
Regressive approaching proportionality			X	
Based on household income adjusted				
Regressive approaching proportionality (S=0.01)				X

Note: A = Apiratanapimonchai, Somchai

T = Tearpasert, Apinya

K = Krongkaew, Medhi

P = Pahirah, Manoon

adjusted for imputed rent, adjustments for under-reported income, corporate retained earnings, and indirect taxes. Under a money income base, the tax structure was found to be regressive, whereas under an adjusted income base, an approach to proportionality appeared.

In the present study, the objectives have been as follows:

1. To investigate the tax structure of Thailand in both 1969 and 1971, and to measure the burden distribution of taxes as well as the effect of the taxes upon income distribution in those two years.

2. To improve upon previous tax incidence analyses in the following aspects. First, extension of the number of income classes to cover the poor as well as the rich classes. Second, utilization of all available empirical evidence, institutional settings, and theories and observations as to economic behavior in Thailand to support the assumptions of shifting of each tax. Third, employment of the technique of S-coefficients to measure numerically the gressivity of individual taxes as well as of the overall tax structure of Thailand.

Government revenues of Thailand consist of taxes, fees and permits (Table II-1), but since the studiy investigates tax incidence, only taxes (personal income tax, local property taxes, corporation tax, general sales taxes, selective sales taxes, import duties, rice premium and export duties) are included. Government revenues from fees and permits are considered as quid pro quo payments which create no "burden", since the benefits received are linked with the payment made. In order to gain knowledge of the distribution impact of the Thai tax structure, all majore taxes (Table II-1), are studied with reference to their structure, yields and effects (Chapter II).

Studies of tax incidence generally neglect the fact that the effects of taxes on the burden distribution of households go beyond the actual tax revenues received by the government. For some underdeveloped countries, including Thailand, tax evasion and the trade polisy of import subsitution are prominent factors which lead to an excess burden of taxes, i.e., create an implicit tax burden on households in addition to the explicit tax burden measured by conventional methods. When these two factors are taken into account, the results of conventional measurement of tax burden distribution may be change (Chapter III), but quantification of these factors is not feasible.

In measuring tax burden distribution, most of the data used in this study are from the Socioeconomic Survey, 1968-1969, conducted by National Statistical Office, Thailand. But since the data presented in the Survey are reported for urban and rural areas separately, numerous adjustments as well as assumptions have been necessary in order to arrive at aggregated data for the nation as a whole.

Income concepts used in measuring the tax burden distribution for 1969 and for 1971 are "household income" and "adjusted household income." The former is money income plus estimated income in kind (Tables IV-4 and IV-5). This income concept is consistent with the Thai personal income tax law. The second concept of income, adjusted household income, is household income plus income from other sources such as underreported income adjusted, corporation tax, net corporate retained earnings, and indirect taxes adjusted (Tables IV-6 and IV-7). The corporation tax and indirect taxes are part of consumption outlays that include tax payments on income and on part of the market price cf goods. This adjusted

household income concept is more comprehensive and is closer to the classic definitions of Simons and Haig. It is also consistent with the national income account of Thailand.

The distribution of the absolute tax burden of households by income class depends directly on the assumptions made as to the shifting of burden for each tax. From theoretical and observed evidence, as well as some empirical studies of Thai economic behavior, this study makes the following assumptions as to incidence of each tax:

1. The personal income tax is not shifted.

2. The property tax on house and land is forward-shifted to tenants. The land development tax is borne by land owners.

3. The corporation tax is borne by capital owners, consumers, and workers in equal proportions of one-third.

4. The business tax is borne by capital owners, workers and con-sumers in the proportion of one-sixth, one-sixth and two-thirds respec-tively.

5. The stamp tax is borne by those who issue the documents sub-ject to the tax.

6. The selective sales taxes and import duties are fully forward-shifting to consumers.

7. Export duties and rice premium are backward-shifted to the producers and farmer.

After assumptions as to the shifting of each tax were determined, each tax was distributed according to the allocation pattern appropriate to the assumed incidence. Thus, except for personal

income tax, taxes assumed not shifted were allocated according to money

income distribution of income classes ฿ 24,000 and over. Taxes assumed

to be backward-shifted were either allocated according to low income

classes (฿ 0 - 24,000) or by rural income distribution (see Appendix

H). Forward-shifted taxes were allocated according to types of house-

hold expenditure, distributed by income class. Expenditures were

divided into eleven categories, and some products had to be allocated

to more than one category of expenditures. (See Appendix G. Table G-4)

After deriving the distribution of absolute tax burden by income

class for each tax (Tables IV-9 and IV-10), the effective rates of the

taxes were estimated by employing the mathematical models presented in

Chapter III, using both household income and adjusted household income

bases. The results are shown in Tables IV-13 to IV-14. However, since

it is hard to judge the gressivity of a tax by the series of effec-

tive tax rates, the S-coefficients (p. 106) was employed to indicate

which taxes are progressive and which are regressive. The effect of

taxes on income distribution was measured by comparing the Gini coeffi-

cient of income distribution before and after tax. Results are shown

in Table IV-17.

Conclusions

Throughout Chapter IV, analysis as to the gressivity of Thai tax

structure was made on the base of effective tax rates derived from two

income concepts -- household income and adjusted household income. It

was concluded that Thai tax structure in 1969 and 1971 was mildly pro-

gressive under the household income base, and was slightly regressive,

approaching proportionality under the adjusted household income base.
Any conclusion as to the gressivity of the Thai tax structure is shown
to depend upon the concepts of income base chosen. Arguably, the house-
hold income concept is relatively narrow and is likely to understate
the income of middle-rich classes because this concept of income is
derived from a survey where a number of income sources belonging to
those income classes are excluded. On the contrary, the adjusted
household income includes, in addition to household income, all other
sources of income, thus bringing it closer to Simons' and Haig's
comprehensive income concepts. Apparently, this latter income concept
seems preferable and has been used by most researchers in tax incidence
analysis in the United States.

Granted this reasoning, some significant conclusions can be drawn
as follow:

1. It is evident that the Thai tax structure in 1969 and 1971
depended heavily upon revenues from indirect taxes, which accounted for
about 68% and 65% of total tax revenues in 19696 and 1971, respectively
(see Table II-1). The personal income tax and corporation tax in 1971,
even though they increased from 1969, contributed only 12% of the total
tax revenues. In addition, the potential for an increase in revenues
from personal income tax seemed to be limited by the fact that about
64% of this tax came from only 5% of taxpayers whose taxable income
exceeded ฿ 50,000 (see Table II-3). Under the corporation tax, a high
percentage of tax came from a larger number of corporations whose total
value of assets exceeded five million baht (see Table II-5). But it was
revealed that the revenues from dividend income were less than 10% of

personal income tax in 1969, indicating that the double taxation on the
net profits of corporations might encourage a high rate of retained
earnings of the corporations. Since the capital market in Thailand is
not well developed and because there is no capital gains tax in Thai-
land, the high rate of retained earnings of corporations may be held
partly for corporation capital expansion, and partly to be invested in
real estate and held for speculation.

2. Tax incidence studies, especially in underdeveloped countries,
should include analysis of any excess or implicit tax burden not
accounted for in conventional measurements. Tax evasion and the trade
policy of import substitution, characteristic of these countries, can
create implicit burdens to be taken into account along with effective
tax rates measured by conventional methods. It was estimated that the
import substitution policy of Thailand created an excess burden or
implicit tax amounting to 0.37% of the GNP or about 2% of the total
government revenue of Thailand in 1971. The total amount of tax evasion
which was found accounted for 1% of the total tax collected in 1969.
But the actual amount of tax evasion was believed to be considerably
higher.

3. Regarding the gressivity of Thai tax structure, the 1969 and
1971 tax structures exhibit a slightly regressive pattern, approaching
proportionality, with regressivity more pronounced in 1971 than in 1969.

4. As far as the burden distribution of taxes on the Thai people
is concerned, the poor and the lower-middle Thai people bore a slightly
heavier tax burden than the middle and middle-rich population in both
1969 and 1971. The result is consistent with the hypothesis of this
study.

5. As measured by the Gini coefficient, the regressivity of the tax structure in 1969 has contributed to greater income inequality in Thailand by 0.1%, whereas in 1971, the income inequality deteriorated by 0.5%. However, since the effect of the taxes on distribution of income is negligible, the result is consistent with the hypothesis that the taxes of Thailand are not an effective means of redistributing income, given the existing tax policy and mode of administration.

6. As shown in Table V, the adjusted household income base in this study is similar to Krongkaew's adjusted income concept. It is apparent that the conclusion as to the 1969 gressivity of Thai tax structure in this study, using adjusted household income base, is the same as the conclusion drawn by Krongkaew, even though there are differences in taxes included as well as assumptions of shifting incidence of property taxes, corporation tax and business tax in the two studies. However, since import duties and business tax carry mroe weight (52%) in the total government revenue in 1969 and since the two studies employ similar assumptions as to the shifting burden of the taxes (i.e., for import duties, the same assumptions are made; for business tax, this study assumes two-thirds forward shifting, whereas Krongkaew assumes full forward shifting), the same conclusion as to the gressivity of the Thai tax structures may be due to the similarity of the assumptions of the two major taxes. It is, therefore, concluded that the different tax incidence assumptsion, made in this study as comapred to Krongkaew's study, produce no substantial differences on the oaverall picture of the Thai tax structure.

It should be noted that the present study presents an estimation

of the distributional pattern of taxes imposed in 1969 and 1971

by the Thai government. Since 1971, there have been some changes

in the structure of tax rates in Thailand; some tax rates have been

adjusted upward and some downward. First, tax rates for personal

income at the lowest three income brackets have been slightly

reduced, whereas the rate for the top income bracket has been

increased 50 to 60%. This adjustment would result in an increase

in the progressivity of the personal income tax structure. However,

since the revenue from this source carries little weight in total

tax revenues, its effects on the overall tax structure will not

be significant. Second, tax rates for corporations have been

equally increased by 5% for each tax bracket. This change, however,

is likely to produce no effect on the corporation rate structure.

Third, there have been increases in the rates of the business

tax on imports and import duties for "unnecessary" goods, and

decrease for necessities and raw materials. Such changes are

likely to reduce the regressivity of those taxes because the

burden of the taxes is likely to be borne more heavily by higher

income classes relative to the lower income classes. Fourth, the

rates of selective sales taxes have been adjusted slightly upward

from most products. This change is not likely to have much effect

on the structure of the selective sales taxes.

Taking into account all of the changes in the tax structure of

Thailand since 1971, it is conceivable that the aforementioned changes

in the tax rate structure will result in a reduction of regressivity

of the overall tax structure to a certain extent, since business taxes

on imports and import duties carry considerable weight in the total

tax revenues. However, Thailand has experienced a substantial rate

of inflation since 1971, the effect of inflation is likely to

increase the regressivity of the overall Thai tax structure

to some extent.[1] Therefore, it is concluded that there is no

reason to believe that the 1971 overall tax structure differs

significantly from the present. The burden distribution pattern

of the taxes in 1971 is still applicable today.

Recommendations

The following recommendations are made to lessen the

regressivity of the tax structure and increase tax revenues to

the Thai tax system.

1. Strengthening the progressivity of personal income tax and

property taxes which are found to be progressive in the tax structure.

With respect to personal income tax, it is arguable that the rates

of the tax are already high. However, improvement of the progressivity

of this tax can be made by introducing a tax on capital gains and by

incorporating it into the personal income tax base. The tax on capital

gains, to a certain extent, will not only help curb speculation on

real estate, espcially land, which is pervasive in Bangkok and some

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[1]Since Thailand relies heavily on indirect taxes which are re-
gressive with respect to income, and since the average propensity
to consume is higher, the lower the income classes, the effect of
inflation would result in a relatively greater tax burden on the
lower income classes. Hence this increases the regressivity of
the taxes.

other areas, but will also put more tax burden on the high income

classes since most of the income from capital gains is likely to

accrus to those high income classes. The property taxes are pro-

gressive, assuming that the tax on land development is borne

by land owners. However, the land development tax rates them-

selves are regressive, ranging from 0.55 percent per rai for land

valued at ฿ 10,000 down to less than 0.10 percent per rai for

land valued at ฿ 500,000. Therefore, the rates of the land

development tax should be made progressive in order to strengthen

the overall progressivity of property taxes.

2. Since Thailand must unavoidably rely on revenues from indirect

taxes which are found to be regressive, reduction in the regressivity

of these taxes should be made. Particular attention should be given

to business tax and import duties, which carry most weight in the

total tax revenues. For business tax, the rates should be increased

for those businesses catering for luxury consumption including night

clubs, massage parlors, and entertainment enterprises. For import

duties, heavier taxation of luxury imports should be considered.

Since those luxury consumption goods are consumed mostly by the higher

income groups, a greater burden will be placed on those higher income

groups, provided that these taxes are allocated according to the

luxury consumption expenditure pattern. Therefore, this policy

will not only reduce the regressivity of indirect taxes to a certain

extent, it will also contribute to the revenue elasticity of the tax

system because of the high income elasticity of luxury consumption.

3. Besides the increase in tax revenues from the introduction
of capital gains tax and increase in the tax rates for luxury
consumption goods, improvement in tax administration should be the
first priority in raising revenues. Because tax evasion is pervasive,
special attention should be given to those taxpayers whose receipts
are mostly in cash payments, including doctors, lawyers, achitects,
and accountants. More stringent law enforcement and heavier punish-
ment for tax officers who accept bribes would reduce tax evasion
and increase government revenue tremendously, perhaps, even to double
the present amount.

Appendix A

BUSINESS TAX RATES FOR IMPORTS AND

DOMESTIC PRODUCTS, 1971

Products	On Imports	On Domestic Products
Processed foods		
Meat products	1.5-7	free
Sugar	7	7
Confectionary	7	0-7
Sweet condensed milk	7	free
Rice	1.5-5	free
Wheat flour	7	7
Cereal preparations	5.1-7	free
Monosodium glutamate	7	7
Seasoning	7	3
Tapioca flour	7	free
Fruit & vegetable preserves	6.7-7.0	free
Fruit canning	7	3.5
Frozen seafood	1.5-7	2.2
Other prepared seafood feeding stuff for animals	5-7	free
Margarine and shortening	7	n.a.
Food preparation	7	5.6
Beverages & tobacco		
Non-alcoholic beverage	7	7
Beer	7	7
Whiskey	30	30
Cigars & cigarettes	7	7
Construction materials		
Cement	5	5

Appendix A (continued)

Products	On Imports	On Domestic Products
Cement & concrete products	1.5-7	1.5-7
Non-metallic construction materials	7	7
Intermediate products I		
Industrial vegetable oil	1.5-7	free
Lumber and woodshaving	5	5
Leather	7	7
Vegetable fibre	1.5	free
Thread and yarn	1.5-7	1.5
Silk	1.5	n.a.
Synthetic fibre	1.5	1.5
Cordage, rope	6-7	free
Petroleum products	1.5-5	4.2
Glass & glass products	1.5-7	6.3
Organic & inorganic chem. mat.	1.5-7	1.7
Synthetic organic dyestuff & dyeing & tanning extracts	1.5	1.5
Essential oil for perfume	1.5-7	1.9
Iron & steel basic products	1.5-7	4.8
Non-ferrous metal	1.5-7	1.9
Intermediate Products II		
Textile fabrics	1.5-7	6.7
Gunny bags	3	3
Pulp and paper	1.5	1.5
Paper & paperboard articles	7	0-1.5
Floor covering & tapestries	7	0-1.5
Rubber tires & tubes	7	7
Synthetic rubber, waste & scap	1.5	2
Materials of rubber	1.5-7	2

Appendix A (continued)

Products	On Imports	On Domestic Products
Articles of rubber	7	7
Finished structural metals	7	1.5
Other metal products	3-7	1.5
Metal tools	7	7
Pigments, paints and varnishes	1.5-7	5.2
Misc. chemical products, plastic & synthetic	1.5-7	4.4
Wood products	4.9-7	1.5
Consumer non-durables		
Clothing	1.5-7	1.5
Other textile articles	7	7
Carpet	7	7
Matting	7	7
Shoes	7	1.5
Printing & publishing	0-7	1.7
Leather goods	7	1.5
Pharmaceuticals & medicine	1.5-7	1.5
Perfumery & cosmetics and other toilet preparation	7	20
Soap, detergents & clearing	7	7
Flashlight batteries	7	7
Electric bulbs	7-15	7
Miscellaneous mfg.	1.5-7	5.9
Consumer durables		
Metal furniture & fixture	7	7
Wooden furniture	7	1.5
Motorcycles, assembly & parts	7-12	8.7
Bicycles, assembly & parts	7	7
Radio & appliance	7-15	–

Products	On Imports	On Domestic Products
Household appliances	3-15.5	-
Storage batteries	7	7
Cutlery	7	7
Metal household equipment	3-15	8.8
Machinery and equipment		
Tractor assembly	3	3
Sewing machine	7	7
Other non-electrical machinery	1.5-7	4.8
Electric wires & cables	3-7	1.5-7
Electrical machinery & apparatus	1.5-7	6.6
Lighting fixture & fitting lamp	7	7
Transport equipment		
Motorvehicle parts	1.5-7	free
Passenger car assembly	30(25)	30
Truck assembly	7	7

Source: Compiled by Arasanee, Narongchai, The Structure of Effective
Protection in Thailand: A Study of Industrial and Trade Policies
in the Early 1970's, (Faculty of Economics, Thammasat University,
Bangkok, Thailand), 1974, Table II - 4.

Appendix B

Thailand: Tariff Rates, 1971

Products	Tariff Rates
Processed food	
Meat products	30-91.5
Sugar	45.6-125
Confectionary	65-102
Sweet condensed milk	40.0
Rice	-
Wheat flour	74.6
Cereal preparation	30-96.4
Monosodium glutamate	101.6
Seasoning	60-113.4
Tapioca flour	30.0
Fruit & vegetable preserves	30-1226.9
Fruit canning	127.7-173.4
Frozen seafood	0-60
Other prepared seafood	n.a.
Feeding stuff for animals	free
Margarine and shortening	n.a.
Food preparations	10-113.4
Beverages and tobacco	
Non-alcoholic beverage	22.4-60
Beer	272.8
Whisky	127.1-634.5
Cigars and cigarettes	60-64
Construction materials	
Cement	10-25
Cement & concrete construction materials	22-1-30

Appendix B (continued)

Products	Tariff Rates
Articles of rubber	10-50
Finished structural metal	15-30
Metal products	0.8-60
Metal tools	15.0
Pigments, paints and varnishes	30.0
Chemical products, plastic and synthetic	0-723.7
Wood products	25-30
Consumer non-durables	
Clothing	10-118.8
Other textile articles	30-60
Carpets	50.0
Matting	115.5
Shoes	30.70
Printing & publishing	0-30
Leather goods	30-60
Pharmaceuticals and medicine	0-80
Perfumery, cosmetics and other toilet preparation	50-100
Soap and detergent	15.5-60
Flashlight batteries	73.2
Electric bulbs	30-47.6
Cutlery	30.0
Metal household equipment	30-60
Consumer durables	
Metal Furniture and fixture	50.0
Wooden furniture	50.0
Motorcycles, assembly & parts	30-40
Bicycle, assembly & parts	30.0
Radio, assembly & parts	5-50

Appendix B (continued)

Products	Tariff Rates
Non-metallic construction materials	30-50
Intermediate products I	
Vegetable oil	25-47.8
Lumber & shaved wood	20.0
Leather	34-43.5
Vegetable fibre	30.0
Thread and yarn	10-50.3
Silk	10.0
Synthetic fibre	20.0
Pulp and paper	10-93.2
Cordage, rope	15-30
Petroleum products	10-256.4
Glass & glass products	0-69.4
Organic & inorganic chemicals	
Synthetic organic dyestuff, dyeing and tanning extracts	0-547.3
Essential oil, perfume	
Iron & steel basic products	1.2-50.5
Non-ferrous metal	0-30
Intermediate products II	
Textile fabrics	0-60
Gunny bags	3
Paper & paperboard articles	10-128.9
Floor covering and tapestries	
Rubber tires & tubes	15.37.6
Synthetic rubber	30-50
Materials of rubber	30-50

Appendix B (continued)

Products	Tariff Rates
T.V. & household appliances	5-80
Storage batteries	50.0
Machinery	
Tractor assembly	2-5
Sewing machine	20.0
Other non-electrical machinery	0-25
Electrical wires and cables	10-40.7
Electrical machinery and apparatus	10-40.7
Lighting fixtures & fitting lamp	30.0
Transport equipment	
Motor vehicle parts	15-60
Passenger car assembly	80.0
Truck assembly	40.0

Source: Same as Appendix A.

Appendix C

ESTIMATION OF HOUSEHOLD DISTRIBUTION BY INCOME CLASS, 1969

"Household," according to the definition given in the Socio-Economic Survey 1968-69, is defined as a private household consisting of a person or group of related or unrelated persons who live, eat, and consume other living essentials together, although some members may be independent financially. Since the distribution of the number of households by income class is not provided in the Survey, an estimation has to be made from data available in the Survey and from other sources. The steps of estimation are as follows:

(1) The number of households by location (Table C-1) is taken from the 1970 population and housing census.

(2) To obtain the number of households by location and by region, multiply the number of households by location (Table C-1) by the percentage distribution of households by location and region (Table C-2 Columns 1 and 3). The distribution of the number of households by region and by location is shown in Table C-2 columns 2 and 4.

(3) Multiply the number of urban households in Table C-2 by the percentage distribution of urban households by household's annual money income and by region (Socio-Economic Survey, Table 1) to arrive at the distribution of urban households by region and by income class as shown in Table C-3.

(4) Multiply the number of rural households in Table C-2 by the percentage distribution of rural households by household's annual money income and by region (Socio-Economic Survey, Table 2) to arrive

at the distribution of rural households by region and by income class
as shown in Table C-4.

Table C-1
Number of Households, 1969

Location	Number of Housholds (Thousand)	Percentage
Urban	762.1	12.9
Rural	5,146.4	87.1
Whole Kingdom	5,908.5	100.0

Source: National Statistical Office, Report of Population and Housing
Census, 1970 (Bangkok, Thailand, 1974).

Table C-2
Percentage Distribution of Household and Number of
Households, by Regions and Locations, 1969

(Thousands)

Region	Urban		Rural	
	Percent (1)	Number (2)	Percent (3)	Number (4)
North	11.0	83.8	24.9	1,281.5
Central	16.3	124.2	23.6	1,214.6
Northeast	10.7	81.5	36.4	1,873.3
South	10.8	82.3	13.6	699.9
Bangkok-Thonburi	51.2	390.3	1.5	77.1
Whole Kingdom	100.0	762.1	100.0	5,146.4

Source: National Statistical Office, Report of Socio-Economic Survey,
1968-69, (Bangkok, Thailand, 1974), p. 36.

Table C-3

Distribution of Urban Households, by Regions and by

Income Classes, 1969

(Thousands)

Income Class	North	Central	Northeast	South	Bangkok Thonburi	Whole Kingdom
Lower than 3,000	1.4	1.4	1.1	0.7	2.0	6.6
3,000 — 5,999	9.2	6.1	3.0	5.2	4.7	28.2
6,000 — 8,999	10.4	9.4	7.7	11.3	17.2	56.0
9,000 — 11,999	12.7	12.7	10.5	11.4	34.7	82.0
12,000 — 14,999	8.9	18.3	9.4	9.4	39.8	85.8
15,000 — 17,999	7.0	13.9	7.5	8.5	38.2	75.1
18,000 — 23,999	12.8	22.7	15.4	11.9	76.9	139.7
24,000 — 29,999	5.0	15.5	8.7	7.4	48.0	84.6
30,000 — 35,999	4.9	6.3	4.7	4.8	30.8	51.5
36,000 — 47,999	6.0	6.0	3.4	4.3	35.5	55.2
48,000 — 59,999	1.1	4.0	4.3	3.1	21.9	34.4
60,000 and over	4.4	7.9	5.8	4.3	40.6	63.0
All Classes	83.8	124.2	81.5	82.3	390.3	762.1

Source: (1) Table C-2.
(2) National Statistical Office, Report of Socio-Economic Survey, 1968-69, (Bangkok, Thailand, 1974), Table 1.

Table C-4

Distribution of Rural Households, by Regions and by

Income Classes, 1969

(Thousands of Baht)

Income Class	North	Central	Northeast	South	Bangkok Thonburi	Whole Kingdom
Lower than 3,000	230.7	85.0	942.3	116.2	0.9	1,375.1
3,000 - 4,499	244.7	111.7	288.5	128.8	2.4	776.1
4,500 - 5,999	189.7	108.1	140.5	131.6	4.5	574.4
6,000 - 7,499	158.9	131.2	112.4	96.6	4.5	503.6
7,500 - 8,999	114.1	132.4	82.4	60.9	2.5	392.3
9,000 - 10,499	64.1	123.9	89.9	42.7	5.6	326.2
10,500 - 11,999	51,3	76.5	26.2	24.5	5.1	183.6
12,000 - 14,999	93.5	125.1	61.8	32.9	11.8	325.1
15,000 - 17,999	51.3	91.1	35.6	19.6	8.7	206.3
18,000 - 32,999	73.0	160.3	69.3	39.8	19.1	361.5
33,000 and over	10.2	69.3	24.4	6.3	12.0	122.2
All Classes	1,281.5	1,214.5	1,873.3	699.3	77.1	5,146.4

Source: (1) Table C-2.
(2) National Statistical Office, Report of Socio-Economic
Survey, 1968-69, (Bangkok, Thailand, 1974), Table 1.

Table C-5

Distribution of National Households, by Regions and

by Income Classes, 1969

(Thousands of Baht)

Income Class	North	Central	Northeast	South	Bangkok Thonburi	Whole Kingdom
Lower than 3,000	231.1	86.4	943.4	116.9	2.9	1,381.7
3,000 - 5,999	443.6	225.9	432.0	265.6	11.6	1,378.7
6,000 - 8,999	283.4	273.0	202.5	168.8	24.2	951.9
9,000 - 11,999	128.1	213.1	126.6	78.6	45.4	591.8
12,000 - 14,999	102.4	143.4	71.2	42.3	51.6	410.9
15,000 - 17,999	58.3	105.0	43.1	28.1	46.9	281.4
18,000 - 23,999	36.9	75.6	38.3	25.0	83.2	259.0
24,000 - 29,999	29.8	70.0	32.2	21.0	54.5	207.5
30,000 - 35,999	32.0	80.0	34.9	19.8	40.7	207.4
36,000 - 47,999	9.1	26.8	10.7	6.2	39.1	91.9
48,000 -- 59,999	4.2	24.8	11.6	5.0	25.5	71.1
60,000 and over	5.0	14.8	8.3	4.9	41.8	75.2
All Classes	1,365.3	1,338.7	1,954.8	782.2	467.4	5,908.5

Sources: Tables C-3 and C-4.

(5) The distribution of national households by income class, at

first glance, seems to be easy to obtain by mergin together the urban

and rural households by income class (Tables C-3 and C-4). But the num-

ber and the range of income classes are different between the urban

and rural income class data. This inconsistency creates a great deal

of problems. One way to merge them is to reduce the number of income

classes of the two into seven income classes, so that the two sets of

data can be easily combined. The lowest income class would start at

lower than ฿ 3,000; the top income class would be ฿ 18,000 and over.

However, even though this method of merging creates no statistical

problem, it is at the expense of class reduction that, ultimately,

will make the income distribution by income class as well as the view

of tax incidence by income class less meaningful. This is because

the top income class ฿ 18,000 and over can not even represent the

starting level of the middle income class of the Thai people, (A family

of five, the average number of members of household in the SES reports,

whose annual income ฿ 18,000 is already at the tax free income tax

level). Another approach in merging urban and rural households is less

accurate but has the advantage of retaining all income classes. This

involves keeping the income classes of urban households and merging

the rural income class into it. From the lowest income ฿ 3,000 up

to income class ฿ 18,000, the classifications are consistent. Since

the range of the tenth income class (฿ 18,000-32,000) of the rural

households cover the seventh to ninth income classes of the urban

households and the range of the eleventh income class (฿ 33,000 and

over) of the rural households cover the ninth to the twelveth income

classes of the urban households, it is arbitrarily assumed that the
number of the households in the tenth and the eleventh income classes
of the rural households are distributed and merged with the urban
households in the following fashion: First, an equal ratio of one-third
of the number of rural households in the tenth income class are merged
with the number of households in the seventh, eighth, and ninth of
the urban income classes respectively. Second, the ratios of three-tenth,
three-tenth, three-tenth and one-tenth of the number of rural housholds
in the eleventh income class are merged with the number of households
in the ninth, tenth, eleventh and twelfth urban income classes
respectively. Though arbitrary, this method provides meaningful income
classes that represent the income classes of the poor as well as the
rich. Following this latter method, national distribution of households
by income class is shown in Table C-5.

Appendix D

ESTIMATION OF TOTAL MONEY INCOME FOR URBAN AND RURAL AREAS, 1969

Since the average money income by income class for the nation as a whole is not available, the total money income for urban and rural areas has to be estimated. This was done by multiplying the average money income for each income class in the urban area (Table D-1) and the rural areas (Table D-2) by the corresponding number of households for each income class in the urban areas (Table C-3) and the rural area (Table C-4). The total money income by income class for the nation as a whole was estimated by combining urban and rural total incomes as outlined in Appendix C.

Table D-1

Urban Average Annual Money Income, by Household's

Annual Money Income Class, 1969

Income Class	Average Money Income (Baht)
Lower than 3,000	2,330.60
3,000 - 5,999	4,409.87
6,000 - 8,999	7,354.77
9,000 - 11,999	10,277.64
12,000 - 14,999	13,158.54
15,000 - 17,999	16,174.14
18,000 - 23,999	20,802.96
24,000 - 29,999	26,122.23
30,000 - 35,999	32,237.11
36,000 - 47,999	40,627.97
48,000 - 59,999	55,165.38
60,000 and over	109,727.93

Source: National Statistical Office, Report of Socio-Economic Survey, 1968-69, (Bangkok, Thailand, 1974), Table 10.

Table D-2

Rural Average Annual Money Income, by
Household's Annual Money Income Class, 1969

Income Class	Average Money Income (Baht)
Lower than 3,000	1,856.01
3,000 — 4,499	3,667.01
4,500 — 5,999	5,119.04
6,000 — 7,499	6,537.89
7,500 — 8,999	8,019.25
9,000 — 10,999	9,593.90
10,500 — 11,999	11,085.11
12,000 — 14,999	13,219.33
15,000 — 17,999	16,126.12
18,000 — 32,999	22,611.44
33,000 — 32,999	54,520.80
All Classes	8,239.28

Source: Same as Table D-1.

Table D-3

Urban Distribution of Money Income, by

Income Class, 1969

Income Class	Household (Thousand) (1)	Average Money Income (Baht) (2)	Total Money (Millions of Baht) (3)	Income Percent
Lower than 3,000	6.6	2,330.60	15.4	0.1
3,000 5,999	28.2	4,409.87	124.4	0.6
6,000 - 8,999	56.0	7,354.77	411.9	1.9
9,000 - 11,999	82.0	10,277.64	842.8	3.9
12,000 - 14,999	85.8	13,158.54	1,129.0	5.2
15,000 - 17,999	75.1	16,174.14	1,214.7	5.6
18,000 - 23,999	139.7	20,802.96	2,906.2	13.5
24,000 - 29,999	84.6	26,122.23	2,209.9	10.2
30,000 - 35,999	51.5	32,237.11	1,660.2	7.7
36,000 - 47,999	55.2	40,627.97	2,242.7	10.4
48,000 - 59,999	34.3	55,165.38	1,897.7	8.8
60,000 and over	63.0	109,727.93	6,912.9	32.1
All Classes	762.1	28,300.48	21,567.8	100.0

Source: Column (1) from Table C-3
        Column (2) from Table D-1
        Column (3) = (1) · (2)

Table D-4

Rural Distribution of Money Income by

Income Class, 1969

Income Class	Household (Thousand) (1)	Average Money Income (Baht) (2)	Total Money (Millions of Baht) (3)	Income Percent
Lower than 3,000	1,375.1	1,856.01	2,552.2	6.0
3,000 – 4,499	776.1	3,667.04	2,846.0	6.7
4,500 – 5,999	574.4	5,119.04	2,940.4	6.9
6,000 – 7,499	503.6	6,537.89	3,292.5	7.8
7,500 – 8,999	392.3	8,019.25	3,146.0	7.4
9,000 – 10,499	326.2	9,593.90	3,129.5	7.4
10,500 – 11,999	183.6	11,085.11	2,035.2	4.8
12,000 – 14,999	325.1	13,219.33	4,297.6	10.1
15,000 – 17,999	206.3	16,126.12	3,326.8	7.8
18,000 – 32,999	361.5	22,611.44	8,174.0	19.3
33,000 and over	122.2	54,520.80	6,662.4	15.7
All Classes	5,146.4	8,244.51	42,402.6	100.0

Source: Column (1) from Table C-4
         Column (2) from Table D-2
         Column (3) = (1) · (2)

Appendix E

ESTIMATION OF INCOME IN KIND, 1969

The steps in estimating income in kind by income class are as follows:

(1) Multiply average income in kind (Tables E-1 and E-2) by the number of households in each region and income class for both urban and rural areas (Tables C-3 and C-4) to derive total income in kind for urban and rural areas. This is shown in Table E-3 and Table E-4 respectively.

(2) Following the method used in Appendix C, urban and rural total income in kind are merged for the total national income in kind for 1969 as shown in Table E-5. The average income in kind by income class for the nation as a whole is shown in Table IV-3.

Table E-1

Urban Distribution of Average Income In Kind, by

Regions and by Income Classes, 1969

(Amount in Baht)

Income Class	North	Central	Northeast	South	Bangkok Thonburi
Lower than 3,000	949.8	2,745.9	161.7	2,491.6	728.8
3,000 - 5,999	1,418.1	500.7	1,616.3	743.1	2,058.6
6,000 - 8,999	868.8	583.4	841.4	774.7	728.9
9,000 - 11,999	607.9	616.4	842.0	921.1	1,008.7
12,000 - 14,999	1,110.4	1,005.6	769.2	1,383.0	767.5
15,000 - 17,999	1,226.8	1,386.1	1,514.3	1,133.5	1,052.4
18,000 - 23,999	468.8	1,476.1	1,989.8	1,141.2	1,000.4
24,000 - 29,999	1,104.9	961.4	515.5	1,021.7	1,198.4
30,000 - 35,999	261.7	1,263.0	391.5	1,940.7	1,170.6
36,000 - 47,999	937.7	3,171.2	1,443.7	1,581.2	1,303.8
48,000 - 59,999	2,091.4	2,094.8	5,598.1	3,293.0	1,662.0
60,000 and over	375.6	1,722.3	3,550.2	3,009.2	1,553.8
All Classes	867.7	1,251.9	1,509.1	1,305.6	1,137.7

Source: Computed from Socio-Economic Survey 1968-69, National
Statistical Office, Bangkok, Thailand by Dr. Oey Astra
Meesook, Economic Faculty, Thammasat University, Thailand.

Table E-2

Rural Distribution of Average Income In Kind, by

Regions and by Income Classes, 1969

(Amount in Baht)

Income Class	North	Central	Northeast	South	Bangkok Thonburi
Less than 3,000	1,693.2	1,761.9	3,433.3	1,401.5	894.9
3,000 - 4,499	1,873.7	1,720.3	3,537.3	1,369.3	702.0
4,500 - 5,999	1,891.9	2,033.8	2,920.1	1,614.1	1,445.0
6,000 - 7,499	2,176.6	1,966.0	3,215.8	1,505.9	1,042.7
7,500 - 8,999	2,604.8	2,043.7	2,286.9	1,863.0	1,694.6
9,000 - 10,499	1,795.9	1,967.0	2,633.3	2,021.9	1,309.2
10,500 - 11,999	1,243.8	2,006.6	2,111.6	2,147.5	1,413.5
12,000 - 14,999	1,824.4	2,122.4	2,447.0	2,128.2	1,087.9
15,000 - 17,999	2,413.7	2,262.3	2,573.9	1,600.1	566.5
18,000 - 32,999	1,869.8	2,304.1	2,205.2	2,261.3	1,259.8
33,000 and over	7,520.0	2,500.7	2,654.9	1,268.4	2,448.4
All Classes	1,975.1	2,055.4	3,212.4	1,625.3	1,344.8

Source: Sam as Table E-1.

Table E-3

Urban Distribution of Total Income In Kind, by Regions

and by Income Classes, 1969

(Millions of Baht)

Income Class	North	Central	Northeast	South	Bangkok Thonburi	Whole Kingdom
Lower than 3,000	1.3	3.8	0.2	1.7	1.5	8.5
3,000 - 5,999	13.0	3.0	4.8	3.9	9.7	34.4
6,000 - 8,999	9.0	5.5	6.5	8.8	10.8	40.6
9,000 - 11,999	7.7	7.8	8.8	10.5	35.0	69.8
12,000 - 14,999	9.9	18.4	7.2	13.0	30.5	79.0
15,000 - 17,999	8.6	19.3	11.4	9.6	40.2	89.1
18,000 - 23,999	6.0	33.5	30.6	13.6	76.9	160.6
24,000 - 29,999	5.5	14.9	4.5	7.5	57.5	89.9
30,000 - 35,999	1.2	8.0	1.8	9.3	36.1	56.4
36,000 - 47,999	5.6	19.0	4.9	6.7	46.3	82.5
48,000 - 59,999	2.3	8.3	24.0	10.2	36.4	81.2
60,000 and over	1.7	13.6	20.6	12.9	63.1	111.9
All Classes	71.8	155.1	125.3	107.7	444.0	903.9

Source: Computed from Table E-1 and Table C-3.

Table E-4

Rural Distribution of Total Income In Kind, by Regions

and by Income Classes, 1969

(Millions of Baht)

Income Class	North	Central	Northeast	South	Bangkok Thonburi	Whole Kingdom
Lower than 3,000	390.6	12.3	3,244.5	162.9	0.8	3,811.1
3,000 – 4,499	458.5	15.8	1,020.5	176.4	1.6	1,672.8
4,500 – 5,999	358.9	18.1	410.3	212.4	6.5	1,006.2
6,000 – 7,499	345.9	21.2	361.5	145.5	4.7	878.8
7,500 – 8,999	297.2	22.3	188.4	113.5	4.2	625.6
9,000 – 10,499	115.2	20.1	239.4	86.3	7.3	468.3
10,500 – 11,999	63.8	12.6	55.3	52.6	7.2	191.5
12,000 – 14,999	170.6	21.9	151.2	70.0	12.8	426.5
15,000 – 17,999	123.8	17.0	91.6	31.4	4.9	268.7
18,000 – 32,999	136.5	30.4	152.8	90.0	24.0	433.7
33,000 and over	81.2	39.3	64.8	8.0	39.4	232.7
All Classes	2,542.2	231.0	5,980.3	1,149.0	113.4	10,015.9

Source: Computed from Table E-2 and Table C-4.

Table E-5

National Distribution of Total Income

In Kind, by Regions and by Income Classes, 1969

(Millions of Baht)

Income Class	North	Central	Northeast	South	Bangkok Thonburi	Whole Kingdom
Lower than 3,000	391.9	16.1	3,244.7	164.6	2.3	3,819.6
3,000 - 5,999	830.4	36.9	1,435.6	392.7	17.8	2,713.4
6,000 - 8,999	652.1	49.0	556.4	267.8	19.7	1,545.0
9,000 - 11,999	186.7	40.5	303.5	149.4	49.5	729.6
12,000 - 14,999	180.5	40.3	158.4	83.0	43.3	505.7
15,000 - 17,999	132.4	36.3	103.0	41.0	45.1	357.8
18,000 - 23,999	51.0	43.5	81.0	44.3	84.8	303.6
24,000 - 29,999	52.0	25.3	56.5	38.1	65.7	237.6
30,000 - 35,999	70.6	29.8	71.6	44.4	55.8	267.2
36,000 - 47,999	30.0	30.8	24.3	9.1	58.1	152.3
48,000 - 59,999	26.7	20.1	43.5	12.6	48.2	151.1
60,000 and over	9.7	17.5	27.1	13.7	67.1	135.1
All Classes	2,614.1	386,4	6,106.1	1,256.6	557.7	10,919.8

Source: Table E-3 and E-4. Detail in merging these two tables is in Appendix C.

Appendix F

DISAGGREGATED TAX AND REVENUE DATA 1969, and 1971

(Millions of Baht)

		1969	1971
I.	**Taxes Included in the Study**		
1.	Personal Income Tax	1,119.5	1,403.3
2.	Property Taxes (Local taxes)	235.9	332.6
	House and land tax	129.2	152.3
	Land development tax	106.7	180.3
3.	Corporation Tax	851.1	955.7
	Agriculture, forestry, fishery	0.9	1.0
	Mining	25.5	28.7
	Construction and repair	40.9	45.9
	Manufacturing	292.8	328.7
	Public utilities and transportation	30.6	34.4
	Commerce	267.2	300.1
	Banking, insurance, real estate	105.5	118.5
	Services	74.9	84.1
	Miscellaneous	12.8	14.5
4.	General Sales Taxes	3,490.4	4,059.7
4.1	Business Taxes	3,367.3	3,937.5
	Commodity sales enterprises	2,682.4	2,710.2
	Rice and saw milling	169.0	202.3
	Contractor	220.5	443.5
	Rental services	6.8	16.6
	Storage and warehouse services	1.2	4.1
	Hotels and restaurants	70.7	157.9
	Transportation services	30.6	50.9
	Pawnshops	5.3	10.0
	Brokers and auctioneers	23.3	46.7
	Real estate enterprise	5.7	33.0

Appendix F (continued)

	1969	1971
Commercial and private saving banks	70.8	191.5
Insurance	21.6	49.3
Unclassified business	59.4	31.5
4.2 Stamp Taxes	123.1	122.2
5. Selective Sales Taxes	2,521.0	3,289.3
Entertainment taxes	85.6	98.4
Liquor	299.7	335.9
Bar	190.7	189.4
Non-alcoholic beverages	126.5	191.4
Matches	24.2	22.9
Tobacco	738.5	988.2
Cement	45.2	51.1
Snuff	10.8	12.7
Oil and fuel	999.7	1,398.9
Other	0.1	0.1
6. Import Duties	5,300.7	5,189.1
Food	369.5	399.3
Drinks and Tobacco	280.2	341.8
Raw materials	57.3	124.4
Wood fiber	5.6	10.9
Clothing fiber	20.9	53.6
Fertilizer	13.7	20.8
Metal and other raw materials	17.1	39.1
Fuel, oil and petroleum products	434.3	309.2

Appendix F (continued)

	1969	1971
Animal and vegetable fats	8.3	10.3
Chemical products	570.4	660.4
Chemical compounds	100.4	113.0
Dye	74.3	74.5
Pharmaceutical products	68.1	72.9
Perfumes	101.1	92.6
Others	226.4	307.4
Manufactured goods	1,512.8	1,267.5
Clothes	625.1	484.9
Leather products	6.3	3.1
Wood and cork products	6.2	6.7
Rubber products	115.3	79.8
Paper	186.3	149.9
Non-metallic products	82.9	97.8
Silver and alloys	9.0	13.8
Other metal products	481.6	431.5
Machinery and transportation equipment	1,675.4	1,672.3
Heavy machinery	450.8	507.4
Electrical generators	376.9	400.4
Transportation equipment	847.8	764.5
Miscellaneous manufactured goods	362.2	347.9
Household fixtures	23.6	17.7
Furniture	8.7	7.8
Travel goods	5.9	4.8

Appendix F (continued)

	1969	1971
Clothing	55.9	53.1
Shoes	7.6	9.5
Scientific equipment, films, & watches	88.2	93.8
Others	172.4	161.2
Others not included elsewhere	30.3	56.0
7. Rice Premiums and Export Duties	1,659.9	434.6
7.1 Rice premiums	1,235.6	261.6
7.2 Export duties	424.3	173.0
Rice	157.4	117.1
Rubber	227.9	21.7
Wood	19.9	16.2
Raw hide	1.1	9.5
Other	18.0	8.5
Total Taxes	15,178.5	15,664.3

II. Government Revenues not Included in this Study

	1969	1971
1. Royalties and permits	628.4	771.9
1.1 Royalties	354.0	410.6
Bird's nest	2.3	2.6
Fishery	3.5	3.9
Wood	48.4	41.1
Other forest products	4.9	6.3
Tin	294.9	356.7
1.2 Permits	274.4	304.7
Radio	0.5	0.5

Appendix F (continued)

	1969	1971
Liquor sale	2.0	0.4
Other excise	8.1	7.3
Forest	7.3	18.6
Rubber	8.4	0.8
Lottery sale	118.1	148.0
Gambling	106.9	109.0
Guns and fireworks	14.1	11.6
Other civil fees	4.2	4.6
Health	4.8	3.9
2. Government services fees	261.7	290.8
Customs	5.7	5.2
Animal epidemic	5.6	9.3
Watergate	10.8	7.9
Fishing	0.4	0.5
Forest conservation	57.5	46.3
Airport and air control	71.1	104.6
Vehicle	11.0	11.4
Land and water transportation	24.7	26.4
Land fees	6.2	9.1
Mineral fees	1.1	1.6
Business registration and weighing fees	16.3	15.8
Others	51.3	52.7
3. Fines and surcharges	83.3	88.4
Surcharges	51.2	63.0

		1969	1971
	Liquor fines	32.1	25.4
4.	Motor vehicles fees	241.7	262.4
5.	Government monopolies	695.2	751.6
	Contribution from tobacco monopoly	540.0	579.4
	Lottery revenue	149.7	168.0
	Others	5.5	4.2
6.	Government sales and rents	110.8	172.9
	Estate sale	0.3	0.7
	National products sale	5.5	8.8
	Public utilities	-	0.3
	Books and documents	0.4	0.6
	Other sales	43.0	78.8
	Rents	61.6	83.7
7.	State enterprises	632.8	787.4
	Revenue sharing from Bank of Thailand	297.0	450.0
	Revenue from state enterprises	306.9	307.8
	Dividend from stock holding	28.9	29.6
8.	Other revenues, Property and Alien registration fees	1,035.3	1,040.7
9.	Tax fines and other fines	69.5	98.8
	Total government revenues other than taxes	3,758.7	4,264.9
	Grand Total of Government Revenues	18,937.2	19,929.2

Sources: (1) Department of Revenue, Annual Report, 1969 and 1971.
          (2) Budget Bureau, Annual Budget, 1971 and 1973.
          (3) Department of Comptroller General, Report of Receipts and Outlays of Thai Kingdom, 1969 and 1971.

Note: Corporation tax and Business taxes are disaggregated from the partial incompleted data.

<u>Appendix G</u>

<u>ESTIMATION OF HOUSEHOLD EXPENDITURE DISTRIBUTION</u>

<u>BY TYPE AND BY INCOME CLASS, 1969</u>

The Socio-Economic Survey 1968-69 provides details of household expenditures by type of expenditure and by income class for both urban and rural areas. Expenditures in this survey are divided into nine categories and each type of expenditure is defined in the survey as follows.

(1) Food purchased and prepared at home -- includes rice, other food, and non-alcoholic beverages purchased for consumption at home.

(2) Food away from home -- includes breakfast, lunch, dinner, supper, non-alcoholic beverages and others which are consumed in the restaurants or other places away from home.

(3) Housing, furnishings and household operations -- includes rent and repair of dwellings, property tax and insurance, water charges, electricity and other household equipment, furniture, cooking utensils, blankets, towels, other household supplies and wages paid to servants.

(4) Clothing and materials -- includes ready-made clothing, footwear and accessories for all members of the household, cloth and materials purchased to make clothing, tailoring, repair and laundry services.

(5) Transportation -- includes purchase, repair and operation of automobiles, bicycles and other vehicles; local bus, train, plane and other fares.

(6) Reading, recreation and education -- includes movies and other

admissions, radio and television set repair, musical and sport equipment, purchase and care of pets, lottery tickets and others, school fees, books and supplies, newspaper, other reading materials.

(7) Medical and personal care -- includes doctor fees, drugs and medicine, dental care, toilet soap, cosmetics, combs, dental cream and brushes, services of barbers and beauty parlours.

(8) Tobacco and alcoholic drinks -- includes cigarettes, tobacco and smoking supplies, alcoholic beverages used at home or purchased in bars.

(9) Miscellaneous -- includes money given to charitable institutions, gifts, money spent for wedding ceremonies, food and other items given to priests.

The steps in estimating household expenditure by type and by income class are as follows:

(1) Rural household expenditure is obtained by multiplying each type of expenditure (SES Table 4) by the corresponding number of rural households by income class (Table C-4). Since the expenditures in SES are for a one-month period, they have been converted to annual figures in order to make them consistent with annual income. Rural household expenditures by income class are shown in Table G-1.

(2) Urban household expenditures are obtained by multiplying each type of expenditure (SES Table 4) in the urban area by the corresponding number of urban households by income class (Table C-3). The result is shown in Table G-2.

(3) Merging rural and urban expenditures for national expenditures follows the procedure described in Appendix C. The distribution of

absolute national expenditures is shown in Table G-3, and the percentage distribution of household expenditures is shown in Table G-4.

Since some taxes on products that are considered to be shifted to consumers cannot be classified as applying to any single type of expenditure such as oil and fuel, part of the tax will be allocated according to transportation expenditure and another part will be allocated according to total expenditures. The food expenditure distribution is obtained by combining the food at home and the food away from home categories. The non-food expenditure is simply total expenditures excluding that for food.

Distribution of Urban Households' Expenditures, by Type and by

Income Classes, 1969

(Millions of Baht)

Income Class	Food at home	Food away from home	Housing	Cloth-ing	Trans-porta-tion	Recreat-tion	Medical	Tobacco	Misc.	Total
Lower than 3,000	11.8	1.4	2.2	1.2	0.8	0.8	0.7	0.9	0.7	20.5
2,000 - 5,999	82.4	12.4	18.2	8.8	5.9	5.8	8.9	8.4	6.4	157.2
6,000 - 8,999	246.0	38.8	55.8	25.3	16.4	19.0	24.7	24.0	18.1	468.1
9,000 - 11,999	454.9	86.4	112.7	53.9	35.9	44.1	58.6	56.2	32.8	935.5
12,000 - 14,999	549.1	124.9	147.4	86.1	57.1	70.4	76.8	76.7	49.2	1,237.7
15,000 - 17,999	561.2	133.6	151.9	99.9	60.5	74.3	72.4	76.4	70.2	1,300.4
18,000 - 23,999	1,168.1	318.5	355.2	233.6	147.5	178.0	157.6	161.8	176.4	2,886.7
24,000 - 29,999	799.1	248.4	258.3	180.7	127.6	151.2	121.9	113.5	133.1	2,133.8
30,000 - 35,999	560.0	182.1	182.2	130.1	100.4	104.8	83.6	81.1	99.9	1,524.2
36,000 - 47,999	677.5	220.6	241.0	174.8	137.2	162.6	105.5	91.6	141.2	1,952.0
48,000 - 59,000	476.2	203.3	190.2	144.8	136.4	116.7	81.7	72.2	162.5	1,584.0
60,000 and over	1,088.0	464.0	544.2	352.2	433.5	310.0	202.8	188.3	470.1	4,053.1
All Classes	6,674.2	2,034.4	2,259.3	1,481.4	1,259.2	1,237.7	995.2	951.1	1,360.6	18,253.2

Source: (1) Table C-3
(2) National Statistical Office, Report of Socio-Economic Survey, 1968-69 (Bangkok, Thailand, 1974), Table 4.

Table G-2

Distributuion of Rural Households' Expenditures, by Type and by

Income Classes, 1969

(Millions of Baht)

Income Class	Food at home	Food away from home	Housing	Cloth-ing	Trans-porta-tion	Recrea-tion	Medical	Tobacco	Misco.	Total
Lower than 3,000	1,851.4	89.1	349.8	450.5	117.2	61.1	300.3	214.5	254.1	3,688.8
3,000 - 4,499	1,673.6	120.1	309.2	384.6	123.9	68.9	302.7	185.3	188.1	3,356.4
4,500 - 5,999	1,580.5	147.5	309.5	373.6	140.6	82.0	285.4	171.0	177.8	3,267.9
6,000 - 7,499	1,256.4	200.6	342.6	405.5	200.0	92.5	304.0	213.9	179.5	3,195.0
7,500 - 8,999	1,517.7	203.8	309.3	425.1	188.3	89.0	267.9	182.2	170.4	3,353.7
9,000 - 10,499	1,495.3	210.6	295.5	407.5	177.7	82.2	253.7	171.5	197.7	3,291.7
10,500 - 11,999	924.5	145.9	174.9	268.1	125.4	67.4	153.1	116.8	159.3	2,135.4
12,000 - 14,999	1,783.6	288.7	412.0	529.8	267.2	187.6	305.5	239.9	431.1	4,445.4
15,000 - 17,999	1,266.0	243.8	291.6	283.5	189.6	136.7	214.6	192.8	309.5	3,128.1
18,000 - 32,999	2,655.7	639.9	663.7	983.4	458.5	339.7	472.4	401.7	853.7	7,468.7
33,000 and over	1,119.5	312.2	328.3	386.4	303.1	184.0	224.8	177.0	536.4	3,571.7
All Classes	17,124.5	2,602.2	3,786.4	4,898.0	2,291.5	1,391.1	3,084.4	2,266.6	3,457.6	40,902.0

Source: (1) Table C-4.
(2) National Statistical Office, Report of Socio-Economic Survey, 1968-69. (Bangkok, Thailand, 1974), Table 4.

Table G-3

Distribution of National Households Expenditures, by Type and by

Income Classes, 1969

(Millions of Baht)

Income Class	Food at home	Food Away from home	Housing	Cloth-ing	Trans-porta-tion	Recrea-tion	Medical	Tobacco	Misc.	Total
Lower than 3,000	1,863.2	90.5	352.0	451.7	118.0	61.9	301.0	215.4	254.8	3,708.5
3,000 - 5,999	3,336.5	280.0	636.9	767.0	270.4	156.7	597.0	364.7	372.3	6,781.5
6,000 - 8,999	3,020.1	443.2	707.7	855.9	404.7	200.5	596.6	420.1	368.8	7,016.8
9,000 - 11,999	2,874.7	442.9	583.1	729.5	339.0	193.7	465.4	344.5	389.8	6,368.6
12,000 - 14,999	2,332.7	413.6	559.4	615.9	324.3	258.0	382.3	316.6	480.3	5,683.1
15,000 - 17,999	1,827.2	377.4	443.5	383.4	250.1	211.0	287.0	269.2	379.7	4,428.5
18,000 - 23,999	2,044.5	529.7	574.2	548.1	298.8	290.1	313.5	294.4	458.1	5,351.4
24,000 - 29,999	1,702.0	465.9	484.0	515.1	283.5	266.7	282.5	250.0	423.4	4,673.1
30,000 - 35,999	1,772.3	487.0	499.7	570.5	342.6	271.8	306.9	266.8	542.5	5,060.4
36,000 - 47,999	1,013.4	314.3	339.5	290.7	228.1	217.8	172.9	144.7	302.1	3,023.5
48,000 - 59,999	812.1	297.0	288.7	260.7	227.3	171.9	149.1	125.3	323.4	2,655.5
60,000 and over	1,199.8	495.1	577.0	390.9	463.9	328.4	225.4	206.0	523.2	4,410.3
All Classes	23,798.5	4,636.6	6,045.7	6,379.4	3,550.7	2,628.8	4,079.6	3,217.7	4,818.2	59,155.2

Source: Tables G-1 and G-2.

Percentage Distribution of National Expenditures, by Type and by

Income Classes, 1969

(Millions of Baht)

Income Class	Food at home	Food away from home	Housing	Cloth-ing	Trans-porta-tion	Recrea-tion	Medical	Tobacco	Misc.	Total	Food	Non-Food
Lower than 3,000	7.8	1.9	5.8	7.1	3.3	2.4	7.4	6.7	5.3	6.3	6.9	5.7
3,000 - 5,999	14.0	6.0	10.5	12.0	7.6	6.0	14.6	11.3	7.7	11.5	12.7	10.3
6,000 - 8,999	12.7	9.6	11.7	13.4	11.4	7.6	14.6	13.1	7.6	11.9	12.2	11.6
9,000 - 11,999	12.0	9.5	9.6	11.4	9.6	7.4	11.4	10.7	8.1	10.7	11.6	9.9
12,000 - 14,999	9.8	8.9	9.3	9.7	9.1	9.8	9.4	9.8	10.0	9.6	9.6	9.6
15,000 - 17,999	7.7	8.1	7.3	6.0	7.0	8.0	7.0	8.4	7.9	7.5	7.8	7.2
18,000 - 23,999	8.6	11.5	9.5	8.6	8.4	11.0	7.7	9.1	9.5	9.0	9.0	9.1
24,000 - 29,999	7.2	10.1	8.0	8.1	8.0	10.2	6.9	7.8	8.8	7.9	7.7	8.1
30,000 - 35,999	7.5	10.5	8.3	8.9	9.7	10.3	7.5	8.3	11.2	8.6	7.9	9.1
36,000 - 47,999	4.3	6.8	5.6	4.6	6.4	8.3	4.3	4.5	6.3	5.1	4.7	5.5
48,000 - 59,999	3.4	6.4	4.8	4.1	6.4	6.5	3.7	3.9	6.7	4.5	3.9	5.0
60,000 and over	5.0	10.7	9.6	6.1	13.1	12.5	5.5	6.4	10.9	7.4	6.0	8.9
All Classes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Table G-3.

Distributive Series of Incomes by Income Class; 1969

and 1971

Income class	1969				1971		
	Low income	Middle-high income	Rural income	Money income	Low income	Middle-high income	Money income
Lower than 3,000	6.9	–	6.0	4.0	4.9	–	2.6
3,000 – 5,999	16.0	–	13.6	9.2	14.7	–	7.6
6,000 – 8,999	18.6	–	15.2	10.7	18.2	–	9.4
9,000 – 11,999	16.3	–	12.2	9.4	15.3	–	7.9
12,000 – 14,999	14.7	–	10.1	8.5	16.9	–	8.7
15,000 – 17,999	12.3	–	7.8	7.1	13.3	–	6.9
18,000 – 23,999	15.2	–	6.4	8.8	16.7	–	8.6
24,000 – 29,999	–	18.4	6.6	7.8	–	19.0	9.2
30,000 – 35,999	–	23.5	11.1	9.9	–	27.2	13.1
36,000 – 47,999	–	15.7	4.7	6.6	–	15.2	7.3
48,000 – 59,999	–	14.4	4.7	6.1	–	15.3	7.4
60,000 and over	–	28.0	1.6	11.9	–	23.3	11.3
All Classes	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Tables IV-1 and IV-2.

Appendix I

<u>LORENZ CURVE AND GINI CONCENTRATION RATIO</u>

<u>Lorenz Curve</u>

One among other techniques in measuring income distribution is the "Lorenz curve." It involves a box diagram, as shown in Figure I-1 below, where cumulative percentage of income is measured along the vertical axis and cumulative percentage of households on the horizontal axis, ranked in ascending order of income received.
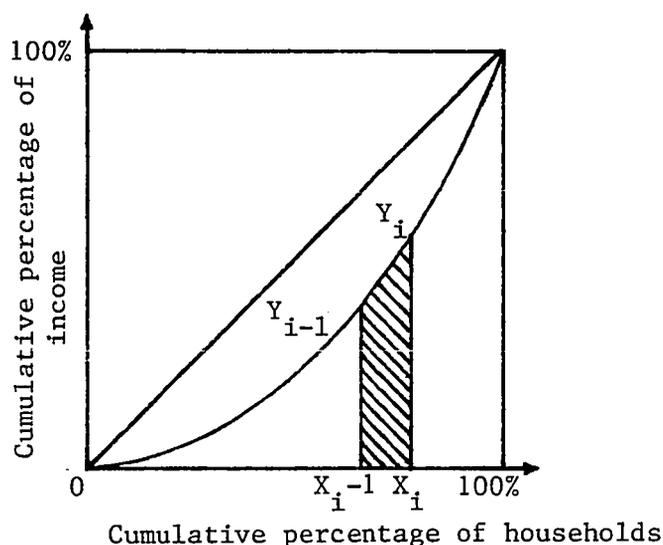

Figure I-1

Lorenz Curve

The diagonal straight line is called "the line of perfect equality" because every point on this line represents an equal percentage of both income and households. When the cumulative percentage of income is plotted against the cumulative percentage of households, the result is a curve normally convex to the right hand corner which is called the "Lorenz curve." As to the significance of the curve, the more convex the curve, the more unequal the income distribution; on the contrary, the less the convexity or the nearer the Lorenz curve approaches the

diagonal straight line, the less unequal the income distribution.

Gini Concentration Ratio

An alternative technique in measuring income distribution is the so-called "Gini coefficient" or "Gini concentration ratio" which compares the shares of income actually held by each percentage of household to the shares of income that would be held under condition of perfect equality. The value of Gini coefficient will vary between zero (perfect equality) and one (absolute inequality). The statistical formula in computing Gini coefficient is presented below.

Let X_i = Cumulative percentage of household at i^{th} income class.

Y_i = Cumulative percentage of income at i^{th} income class.

G = Gini coefficient

From Fig. I-1 G = $\dfrac{\text{Area between diagonal and curve}}{\text{Area under diagonal}}$

Or G = $\dfrac{0.5 - \text{Area under the curve}}{0.5}$

$= 1 - 2(\text{Area under the curve})$

Let the shaded area under the curve or the trapezoid $Y_{i-1}Y_iX_iX_{i-1}$ be represented by A_i

Then $A_i = (X_i - X_{i-1})(Y_i + Y_{i-1}) / 2$

Therefore $G = 1 - \sum_k (X_i - X_{i-1})(Y_i + Y_{i-1})$

$G = 1 - \sum_{i=1} (X_i - X_{i-1})(Y_i + Y_{i-1})$

Where $0 > G < 1$

It should be noted that the Gini coefficient derived from the

above formula tends to underestimate the true value of the coefficient

because of the linear approximation to the curve. However, if

k(the number of income classes) is large, the two values will converge.

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