

1988 TDRI Year-End Conference on
Income Distribution and Long-Term Development

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Its Distributional Implications**

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THE TAX STRUCTURE IN THAILAND
AND
ITS DISTRIBUTIONAL IMPLICATIONS

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PREFACE

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CHAPTER 1

INTRODUCTION

The government of Thailand accounts for a considerable share of the economic activity as it purchases about 20 % of the total output.¹ The main source of its revenue comes from tax collections which presently run around 14% of the gross domestic product. While economists argue about the desirable size of the public sector, we hardly hear of arguments against the existence of the public sector. It is an accepted fact of life that the government is needed to perform certain functions and to do so it needs resources. In Thailand, as in most other countries, taxes in various forms are the major source of the total government revenue. In 1987, tax revenue accounts for about 91% of the total government revenue.

Although both the government expenditures and the taxes that it collects affect the economy in many ways, this report will focus on the impact of the tax structure on the distribution of income. Taxes affect the prices of products and factors of productions. Changes in prices are felt directly by consumers, and the indirect impact on resource allocation may lead to changes in factor incomes that have differential impact on various groups in the economy.

1. In 1986, the government expenditure (consumption and investment) totalled 228, 106 million baht while the gross domestic product was 1,099,541 million baht. The size of the public sector as measured above is in fact an underestimate as it does not take into account some of the items in the government's extra-budgetary expenditure.

In assessing the impact of taxes on the distribution of income, the general equilibrium approach will be used. This allows for the full impact of taxes on product prices (the "uses" side), and also their impact on factor prices, and hence on household incomes (the "sources" side).

The distributional impact of 7 broad groups of taxes will be assessed. These are:-

1. Income taxes.
2. Corporation taxes.
3. Business taxes.
4. Sales (Excise) taxes.
5. Import duties.
6. All indirect taxes.
7. All taxes, direct and indirect.

In general the conclusion is that the overall tax structure in Thailand is progressive, i.e. that the richer households are relatively worse off with the current tax system compared to the poorer households. Income taxes are obviously progressive. But, according to the analyses in chapter 5, so are corporation taxes, business taxes and sales taxes. Only with import duties are there evidences for some regressivity. However, apart from income taxes on households, the degree to which the tax system affect the distribution of income appears to be rather mild. It would not be too far off the mark to say that the indirect taxes are almost neutral in their effects.

The main analyses of tax incidences are in chapter 5. In chapter 2, a brief review is given of the major sources of taxation and how the structure of taxation in Thailand has changed over the last three decades. In chapter 3, a comparison of the tax structure in Thailand with those in some

Asian countries will be made to assess the position of Thailand with countries of about the same level of development. In chapter 4, some prior studies on the distributional impact of taxes in Thailand are reviewed. Finally, the last chapter describes the general equilibrium approach and the results on tax incidences.

CHAPTER 2

THE TAX STRUCTURE IN THAILAND

2.1 A Brief Historical Background on Taxation

According to the Ram Khamhaeng Inscription,¹ some form of taxation had been in existence since the Sukothai period (B.E. 1800-1893 or A.D. 1257-1350). The word *chakop*, known as transit or customs duty, was mentioned in the Inscription that King Ram Khamhaeng did not levy *chakop* on his subjects. However, at present we know that debates are going on about the authenticity of the Inscription.² Pending authoritative proof of the historical stone, and given that there are no other records about the sources of government revenue during that time, we can only speculate that taxation had been used since then.

Available evidences during the Ayuthya period (B.E. 1983-2310 or A.D. 1350-1767) and the early Bangkok period (starting B.E. 2325 or A.D. 1782) suggest that there were several forms of taxation during the time.³ Prince Damrong Rachanuphap

1. Cited in Wira Wimoniti (1961 : 16-21).

2. See Silapa Wattanatham, Special Issue : "The Ram Khamhaeng Inscription: Who Invented It? Authentic or Fake.", edited by Sujit Wongsethet, July, 1988.

3. See Wira Wimoniti (1961) which cited, among other works, La Loubere (1693) A Historical Relation of the Kingdom of Siam (London, Royal Exchange, New Exchange and Half Moon) and also the Thai famous Three Seals Law (Kotmai Tra Samduang).

classified the various forms of taxes collected then into four categories.⁴ *Changkop* or *Chakop* is equivalent to the present customs duty. It was levied in money or in kind on commodities passing in or out of certain areas. *Akorn* was levied on earning activities such as farming, plantation, orchard, and franchises. *Suai* had several meanings one of which was the payment in lieu of personal services (corvee) or "*suai tan rang*", later called "*ngern ratchupakan*" (capitation tax).⁵ *Racha* was the fee imposed on particular services rendered by the government for personal benefits.

The above names of taxes and fees had evolved and only the word *akorn* survived into the modern period. Together with the word *pasi*, which emerged during the reign of King Rama III, *pasi-akorn* now means taxation. Ingram (1971: 177) noted that the administration of the country's finances was confused and badly organized until 1892 when King Chulalongkorn initiated a reorganization of the financial system whereby a budget system with a regular audit was introduced. The King's personal expenditures were separated from the ordinary state expenditures; and improvements were made in the collection of taxes.

The revolution in 1932 changed the country from an absolute monarchical state to that of a constitutional monarchy. There was also an attempt to change the tax structure of the country. For example, the new revolutionary government initiated income and salary tax and business tax in

4. Prince Damrong Rachnuphap (1912). *History of Certain Taxes*, as cited in Wira Wimoniti (1961) and R. Thanapornpun (1985)

5. Other meanings of *suai* were inheritance tax and taxes from tributary states. See R. Thanapornpun (1985 : 4-6)

1932 and later in 1938 it repealed several previous tax laws among which were the rice land tax and the capitation tax. This was supposed to shift the tax burden from rice farmers onto business and income groups. In 1938 the first Revenue Code (Pramuan Ratsadakorn B.E. 2481) of the country was enacted from which subsequent royal decrees and ministerial regulations regarding tax measures are proclaimed. The 1938 Revenue Code has been in used up to the present time.

2.2 Development Plans and Fiscal Discipline Since the 1960's

The second World War brought much disruption to the fiscal position of the country as the Thai government came out of the war with huge expenditures and meager revenues. Although the deficit budget practiced during the war continued, the growth of government revenue in the immediate post-war period was quite substantial. This reflects the fact that government revenue was quite dependent on import and export taxes which had fallen sharply during the war. The proportion of total revenue derived from import-export taxes which was about 22% during 1945-1947 rose to about 50% in the late 1950's. (See Table 2.1)

This study chose the early 1960's as the starting point of analysis of the tax structure in Thailand for several reasons. First many important institutions were set up during 1959-1960 and began to perform their functions in the early 1960's. The most notable in the conduct of fiscal policy are the Budget Bureau (1959) and the Fiscal Policy Office (1959). Second, The National Economic Development Board as it was

Table 2.1: Structure of Thai Government Revenue in Nominal Terms,
Fy 45/47-58/60

(in percentage)

Type of Government Revenue	Three Year Average			
	1945-47	1950-52	1955-1957	1958-60
1. Tax Revenue	61.48	71.11	86.63	81.27
1.1 Income taxes	3.26	6.00	6.49	7.18
1.2 General Sales Taxes	3.39	3.66	8.49	9.15
1.3 Specific Sales Taxes	25.83	19.16	15.56	11.42
1.31 Excise Taxes	23.42	15.55	12.02	9.40
1.32 Natural Resources Taxes	2.41	3.61	3.53	2.02
1.4 Import-Export Taxes	22.58	36.53	50.49	48.70
1.41 Export Taxes	4.84	7.92	8.02	6.45
1.42 Import Taxes	17.34	28.48	27.62	29.56
1.43 Rice Premium	-	-	14.60	12.53
1.44 Others	0.4	0.13	0.25	0.16
1.5 Fees and Permits	6.37	5.7	5.53	4.02
1.6 Other Taxes	0.06	0.05	0.06	0.81
2. Sales of Goods and Service	0.61	0.18	0.22	3.8
3. Government Enterprises and Dividends	34.8	25.92	11.09	11.50
4. Miscellaneous Revenue	3.11	2.79	2.07	3.43
5. Total Government Revenue	100.0	100.0	100.0	100.0

Source: Thailand Statistical Year Book, various issues.

initially called, was also created in 1959 to be responsible for the overall development planning of the country. The country's first national economic development plan started in 1961 for the period 1961-1966. Third, there was a move among leading officials from the Ministry of Finance and the Bank of Thailand to set a fiscal discipline to the budgetary procedure.⁶ As a result, the Budget Procedures Act B.E. 2502 (1959) was enacted. This act spells out the rules and regulations in budget preparation and use of public funds. It also sets a limit on the public debt. Fourth, there was a reclassification of government expenditure by economic and functional categories in 1961 and in this year the fiscal year was also changed to October 1 to September 30. As a consequence the 1961 fiscal year data covered only nine months.⁷

In addition, the late 1950's and early 1960's was an important turning point of Thailand's modern economic history as the national policy switched from economic nationalism by expanding state enterprises to encouragement of private enterprises.⁸ All the above events must have affected the country's course of development since then.

6. Puey Ungphakorn, "Look backward, look forward," a paper written in 1976 and reprinted in R. Thanapornpun (1986 editor) Puey Ungphakorn: Life, Work and His Past. (Bangkok, Thammasat University Press)

7. BOT, Annual Report (1961 : 1).

8. There were many reasons and events, both internal and external, both political and economic, which led to this change of policy. For more details, see Meesook, Tinakorn and Vaddhanaphuti, "The Political Economy of Thailand's Development: Poverty, Equity and Growth, 1850-1985," IBRD research report, forthcoming.

2.3 The Tax Structure and Its Development, 1961-1987

The public finance system in Thailand has been and still is highly centralized. The central government accounts for an outstanding share of the revenue and expenditure of the public sector.⁹ This also holds true for the public sector's tax revenue. The data in Table 2.2 show that during the 1960s the proportion of central government tax revenue run around 95 % of the total tax revenue. Although the share of local government revenue increased somewhat during the 1970s and 1980s, the share of the central government tax revenues still hovers around 90%.¹⁰ For this reason plus the fact that details about local tax revenue are not as readily available, this study will concentrate on the tax structure of the central government.

Tables 2.3 and 2.4 present the structure of the central government revenue and tax revenue during 1961-1987 on a five-year average basis to smooth out any irregular fluctuations. The importance of tax revenue is obvious and hardly changes over the last three decades.¹¹ The share of tax revenue in total government revenue was about 92% during 1961-65. At present, tax revenue accounts for about 91% of the total revenue.

9. IBRD (1974). A Study of Public Finances in Thailand. Vol.1 (pp.2-3).

10. Part of the variation between 1960s and later periods could be due to the revision of the new series.

11. It should be noted here that revenues from tobacco monopoly and state lottery revenues are included as other taxes. While such definition is open to debate it is beyond the scope of this study.

Table 2.2: Data on GDP, total taxes, central government taxes and local taxes: 1961-1987

(million Baht and %)

Year	Government tax Revenue			Proportion to total tax revenue	
	Total ^a	Central ^b	Local ^b	Central	Local
1961	7,216.9	6,868.0	348.9	95.2	4.8
1962	7,811.6	7,435.0	376.6	95.2	4.8
1963	8,538.5	8,060.0	478.5	94.4	5.6
1964	9,808.7	8,297.0	511.7	94.8	5.2
1965	10,948.7	10,378.0	561.7	94.9	5.1
1966	12,519.8	11,844.0	675.8	94.6	5.4
1967	14,153.0	13,570.0	583.0	95.9	4.1
1968	16,020.0	15,406.0	614.0	96.2	3.8
1969	17,552.0	16,803.0	749.0	95.7	4.3
1970	18,416.0	17,066.0	1,350.0	92.7	7.3
1971	19,119.0	17,475.0	1,644.0	91.4	8.6
1972	21,059.0	19,066.0	1,993.0	90.5	9.5
1973	26,758.0	24,440.0	2,318.0	91.3	8.7
1974	37,954.0	36,252.0	1,702.0	95.5	4.5
1975	39,272.0	35,019.0	4,253.0	89.2	10.8
1976	43,461.0	39,260.0	4,201.0	90.3	9.7
1977	54,964.0	49,382.0	5,582.0	89.8	10.2
1978	66,478.0	60,252.0	6,226.0	90.6	9.4
1979	80,645.0	73,637.0	7,008.0	91.3	8.7
1980	99,118.0	88,473.0	10,645.0	89.3	10.7
1981	111,882.0	100,906.0	10,976.0	90.2	9.8
1982	119,167.0	105,076.0	14,091.0	88.2	11.8
1983	143,108.0	129,062.0	14,046.0	90.2	9.8
1984	152,010.0	136,246.0	15,764.0	89.6	10.4
1985	157,114.0	144,947.0	12,167.0	92.3	7.7
1986	169,084.0	154,202.0	14,882.0	91.2	8.8
1987	198,250.0	185,690.0	12,560.0	93.7	6.3

Notes a. Total tax revenue is the sum of indirect taxes plus direct taxes on corporations and on households. Data for total taxes during 1970-1987 are taken from NIA new series, 1970-1987.

Central government taxes are taken from BOT, Statistical Bulletin, various issues. Local taxes are calculated as the difference between total tax revenue and central government tax revenue.

Source Data During 1950-1976 are collected from NESDB, National Income of Thailand, various issues, by M. Panthulap and P. Ratchathorn, Faculty of Economics, Chulalongkorn University. The new series which only dates back to 1970 are provided by NESDB.

Table 2.3: Structure of Central Government Revenue in Nominal Terms

Type of Government Revenue	FY 1961 to FY 87 (% of total government revenue)					
	Average 1961-65	Average 1966-70	Average 1971-75	Average 1976-80	Average 1981-85	Average 1986-87
A. Tax Revenue	91.83	89.40	89.82	91.62	90.49	91.18
1. Income Taxes	9.33	10.52	13.22	17.52	20.60	19.96
1.1 Personal Income Tax	5.65	5.96	6.50	7.68	10.42	10.69
1.2 Corporate Income Tax	3.68	4.56	6.72	9.84	10.18	9.27
2. General Sales Taxes	17.05	19.27	20.37	20.62	19.60	17.63
2.1 Business Tax	16.11	18.63	19.84	20.06	18.99	16.93
2.2 Stamp Duties	0.94	0.64	0.53	0.56	0.62	0.70
3. Specific Sales Taxes	12.75	15.65	19.16	23.03	24.56	28.20
3.1 Excise Taxes	10.51	13.39	17.18	19.36	22.33	26.91
3.2 Taxes on Natural Resources	2.24	2.26	1.98	3.67	2.23	1.29
4. Customs Duties	44.15	36.34	29.46	25.02	20.81	19.18
4.1 Export Duties	4.18	2.21	2.27	3.35	1.61	0.53
4.2 Import Duties	29.20	27.95	23.77	21.65	19.20	18.65
4.3 Rice Premium ¹	10.71	6.11	2.97	0.01	0.00	0.00
4.4 Others ²	0.05	0.07	0.00	0.00	0.00	0.00
5. Fees and Permits	2.82	2.09	1.52	0.89	1.59	2.98
6. Other Taxes	5.73	5.52	6.09	4.54	3.33	3.23
B. Nontax Revenue	8.17	10.60	10.17	8.38	9.51	8.82
1. Sales of Good and Services	2.82	2.47	2.28	2.04	1.53	1.69
2. Gov. Enterprises & Dividends	2.23	3.09	3.70	2.79	3.02	3.31
3. Other Government Revenue	3.12	5.04	4.19	3.55	4.96	3.82
C. Total Government Revenue	100	100	100	100	100	100

Note 1. All proceeds from rice premium have gone directly to the Farmers' Aid Fund Since 1976.

2. Others include gold and gourmet premium collected in the 1960s.

3. Other Taxes include fiscal monopolies, i.e. tobacco monopoly and state lottery revenues.

Source Calculated from BOT worksheets. For detailed data in absolute terms See Appendix 1

Table 2.4: Structure of Tax Revenue FY 1961-FY1987

Type of Tax	Average	Average	Average	Average	Average	Average
	1961-65	1966-70	1971-75	1976-80	1981-85	1986-87
1. Income Taxes	10.16	11.77	14.72	19.12	22.76	21.89
Personal	6.15	6.67	7.24	8.38	11.51	11.72
Corporate	4.01	5.10	7.48	10.74	11.25	10.17
2. Indirect Taxes	89.84	88.23	85.28	80.88	77.24	78.11
General Sales Tax	18.57	21.55	22.68	22.51	21.66	19.34
Specific Sales Tax	13.88	17.51	21.33	25.14	27.14	30.93
Customs Duties	48.08	40.65	32.80	27.31	23.00	21.03
Fees and Permits	3.07	2.34	1.69	0.97	1.76	3.27
Others	6.24	6.17	6.78	4.95	3.68	3.54
3. Total Tax Revenue	100	100	100	100	100	100

Source : Calculated from BOT worksheets

FIGURE 2.1: STRUCTURE OF TOTAL TAX REVENUE

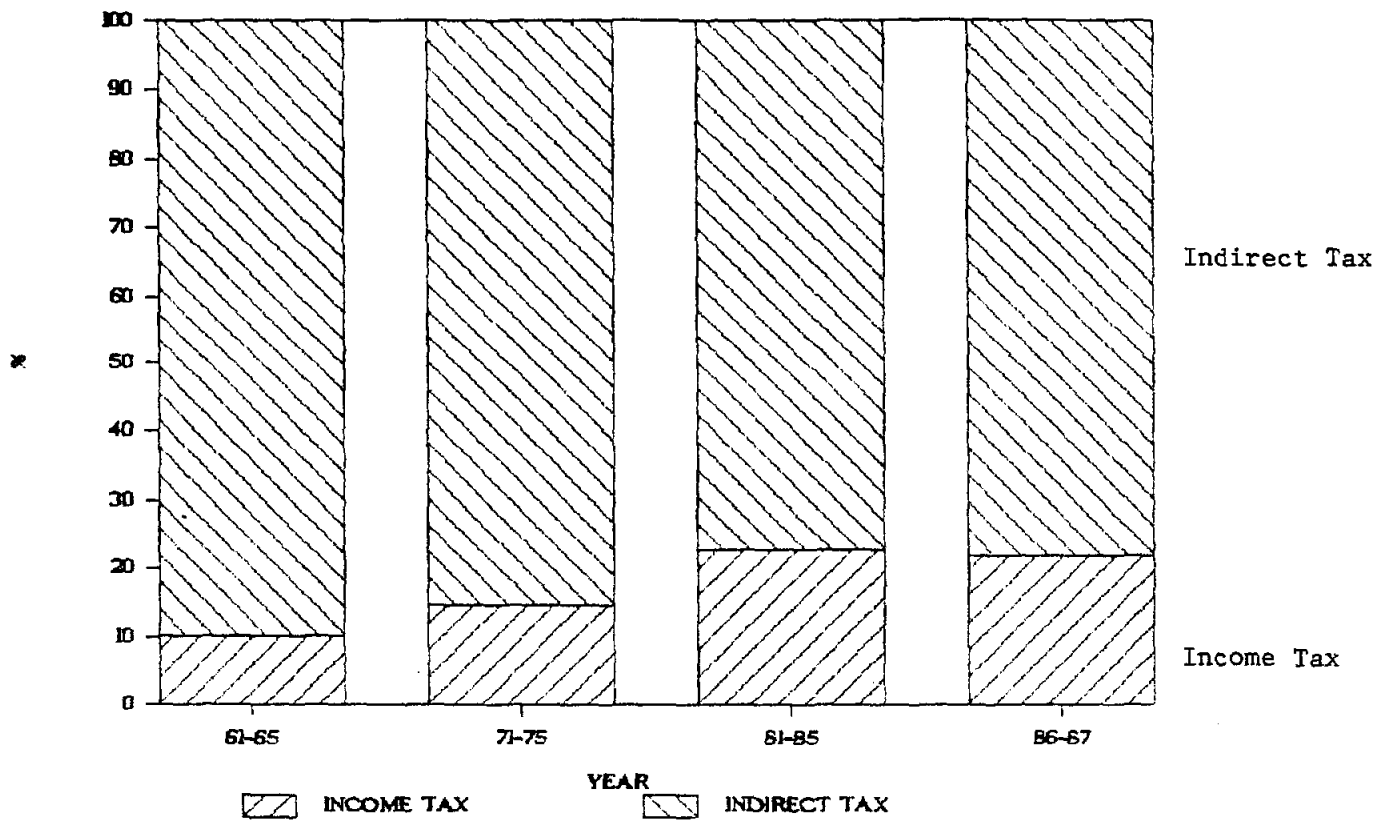


Table 2.5: Growth Rate of Tax Revenue

(compound annual rate-approximate)

	In nominal terms						In constant 1972 prices			
	1961-65	1966-70	1971-75	1976-80	1981-85	1986-87	1970-75	1975-80	1980-85	1985-87
1. Income Taxes	13.1	14.2	23.0	22.0	14.9	3.0	12.4	13.3	11.3	c
Personal	8.2	14.9	15.3	23.0	22.0	a	5.4	13.4	17.9	c
Corporate	22.0	32.0	31.0	22.0	8.5	8.7	20.0	13.2	5.1	4.8
2. Indirect Taxes	11.0	10.3	13.8	19.4	9.7	13.2	4.1	10.4	6.3	9.0
General Sales Tax	26.0	13.1	16.5	17.7	11.3	4.9	6.5	8.8	7.8	1.2
Specific Sales Tax	14.5	13.1	19.4	25.0	11.1	19.2	9.2	15.7	7.5	14.7
Customs Duties	5.5	7.9	10.0	16.6	7.3	9.1	0.5	7.8	3.9	5.1
Fees and Permits	4.5	5.3	3.9	16.3	12.0	75.5	b	7.5	8.5	70.0
Others	13.5	10.4	10.1	15.4	7.4	10.5	0.7	6.7	4.1	6.7
3. Total Tax Revenue	11.2	10.7	15.2	20.0	10.8	10.9	5.3	11.0	7.4	6.8
4. Total Revenue	11.6	11.3	15.0	19.2	11.5	10.0	5.1	10.2	8.0	6.0

- Notes
- The growth rate during 1986 was 2.4% and there was a decrease at the rate of -5.6% during 1987. The approximate compound annual rate of decrease in -3.4%
 - There was a decrease in the real values of fees and permits between 1970-75. The approximate compound annual rate of decrease in -5.4%
 - The decrease in the real values of income taxes is due mainly to the decrease in personal income taxes during the same period. The approximate compound annual rate of decrease for income tax is -0.8% and for personal income tax -5.4%

Source: Calculated from BOT worksheets

The structure of tax revenue presented in Table 2.4 and Figure 2.1 shows that indirect taxes account for the substantial part of the tax revenue. However, its share has decreased from 89.8% during 1961-65 to 78.1% during 1986-87. At the same time the importance of income taxes has increased from around 10% of total tax revenue to about 22% at present.

The compound growth rates of various taxes in both nominal and real terms are presented in Table 2.5. We can see that the government tax revenue grew in nominal terms at the rate exceeding 10% a year since 1961. The growth rates were particularly high during the 1970s. However, when we take into account the effect of inflation during the period the average growth rates of the tax revenue went down considerably.¹²

2.3.1 Income Taxes

Both the personal income taxes and corporate income taxes have increased in importance. Nevertheless, their shares in total tax revenue are considered low when compared to other countries. (See chapter 3)

During 1986-87, the personal income tax, which is collected from earned income, interest, dividends, rent, self-employed and income from business,¹³ contributed 11.7% of total tax revenue compared to 6.2% during 1961-65 (Table 2.4). The increased importance of personal income tax was prominent when

12. The real growth rates were computed by using the GDP deflator from NESDB new series which is available for only the period since 1970.

13. For details on the income tax base, statutory tax rates, and effective rates see C. Sahasakul (1987), "Features of the Tax System in Thailand" (TDRI research report).

the government started to collect taxes from interest earned from bank time deposits and financial institutions since 1978. In fact, prior to 1961 interest income from bank deposits was subject to income taxation but during 1961 to November 1977 it was tax exempted.¹⁴ The amount of tax collected from interest income during December 1977 was negligible and started to show significance since 1978.

Because of strong resistance from interest groups, the move towards tax collection of interest income has been gradual. In 1977 the tax on interest income was withheld at a flat rate of 10%. In 1982, the rate climbed up to 12.5%. In 1984, interest income was supposed to be subject to regular income tax brackets but this move was defeated when the period for such action was extended to 1986 and then again to 1988. Instead, the government raised the flat tax rate on interest income to 15% in 1986. From Table 2.6 we can see that the proportion of taxes collected from interest income has increased from only 5% of total personal income taxes in 1978 to over 30% during 1985-1987.

Another personal income tax item of increasing importance is the tax on capital gains from sale of immovable assets (item 1.3 in Table 2.6). Prior to 1982, the profits derived from the sale of property which is not "for the purpose of trade or obtaining profit" were exempted from income tax. Since it is difficult to establish that the transaction was for the purpose of obtaining profit, virtually all the gains realized on the sale of immovable assets escaped taxation. The abolishment of the exemption in 1982 was a direction towards income

14. R. Thanapornpun (1978). Taxes on Interest Income from Bank Deposits. Duangkamon Publishers, pp.4-5.

Table 2.6: Personal Income Taxes By Type of Collection FY 1977-1987

(million baht)

Type of Collection	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1. Withholding Taxes	2,600.3	3,337.9	4,459.4	5,238.8	6,676.1	8,659.3	11,927.8	14,485.7	16,902.3	17,154.6	17,565.3	21,653.1
	(71.6)	(66.2)	(72.9)	(72.8)	(78.0)	(76.7)	(84.2)	(85.7)	(85.7)	(86.7)	(89.9)	(90.2)
1.1 Wages & Salaries (private & public)	2,600.3	3,087.1	3,603.3	4,097.7	4,786.3	5,226.0	6,248.5	7,943.4	9,011.4	8,626.7	8,612.4	10,377.2
	(71.6)	(61.2)	(58.9)	(56.9)	(55.9)	(46.3)	(44.1)	(47.0)	(45.7)	(43.6)	(44.1)	(43.2)
1.2 Interest	-	250.8	856.0	1,144.1	1,889.8	2,613.2	3,983.0	4,634.0	6,027.1	6,668.4	6,292.4	5,294.0
	-	(5.0)	(14.0)	(15.9)	(22.1)	(23.1)	(28.1)	(27.4)	(30.6)	(33.7)	(32.2)	(22.1)
1.3 Capital gain on immovable assets (when realized)	-	-	-	-	-	406.6	1,166.9	1,296.7	1,286.3	1,280.1	2,049.1	4,918.8
	-	-	-	-	-	(3.6)	(8.2)	(7.7)	(6.5)	(6.5)	(10.5)	(20.5)
1.4 Crops and others	-	-	-	-	-	413.4	529.4	611.5	577.5	579.4	611.4	1,063.1
	-	-	-	-	-	(3.7)	(3.7)	(3.6)	(2.9)	(2.9)	(3.1)	(4.4)
2. Filed at year end	864.1	1,340.4	1,412.4	1,687.9	1,597.7	1,882.0	1,402.8	1,544.5	1,567.9	1,242.7	1,094.0	1,256.9
	(23.8)	(26.6)	(23.1)	(23.4)	(18.7)	(16.7)	(9.9)	(9.1)	(7.9)	(6.3)	(5.6)	(5.2)
3. Mid year tax	-	-	-	-	-	-	268.8	256.9	442.9	361.3	411.1	457.4
	-	-	-	-	-	-	(1.9)	(1.5)	(2.3)	(1.8)	(2.1)	(1.9)
4. Overdue tax collection	166.0	364.4	241.9	273.5	281.7	268.6	563.8	606.6	524.4	514.2	447.8	633.0
	(4.6)	(7.2)	(4.0)	(3.8)	(3.3)	(2.4)	(4.0)	(3.6)	(2.7)	(2.6)	(2.3)	(2.6)
5. Amnesty	-	-	-	-	-	485.8	-	-	277.0	509.1	27.5	-
	-	-	-	-	-	(4.3)	-	-	(1.4)	(2.6)	(0.1)	-
6. Total Personal Income Tax	3,630.3	5,042.7	6,113.6	7,200.2	8,555.5	11,295.6	14,163.1	16,893.7	19,714.5	19,781.9	19,545.6	24,00.5
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

Note Figures in parenthesis are proportion to total personal income tax.

Source Department of Internal Revenue, Division of Policy and Planning

redistribution and also generates higher tax revenues for the government.

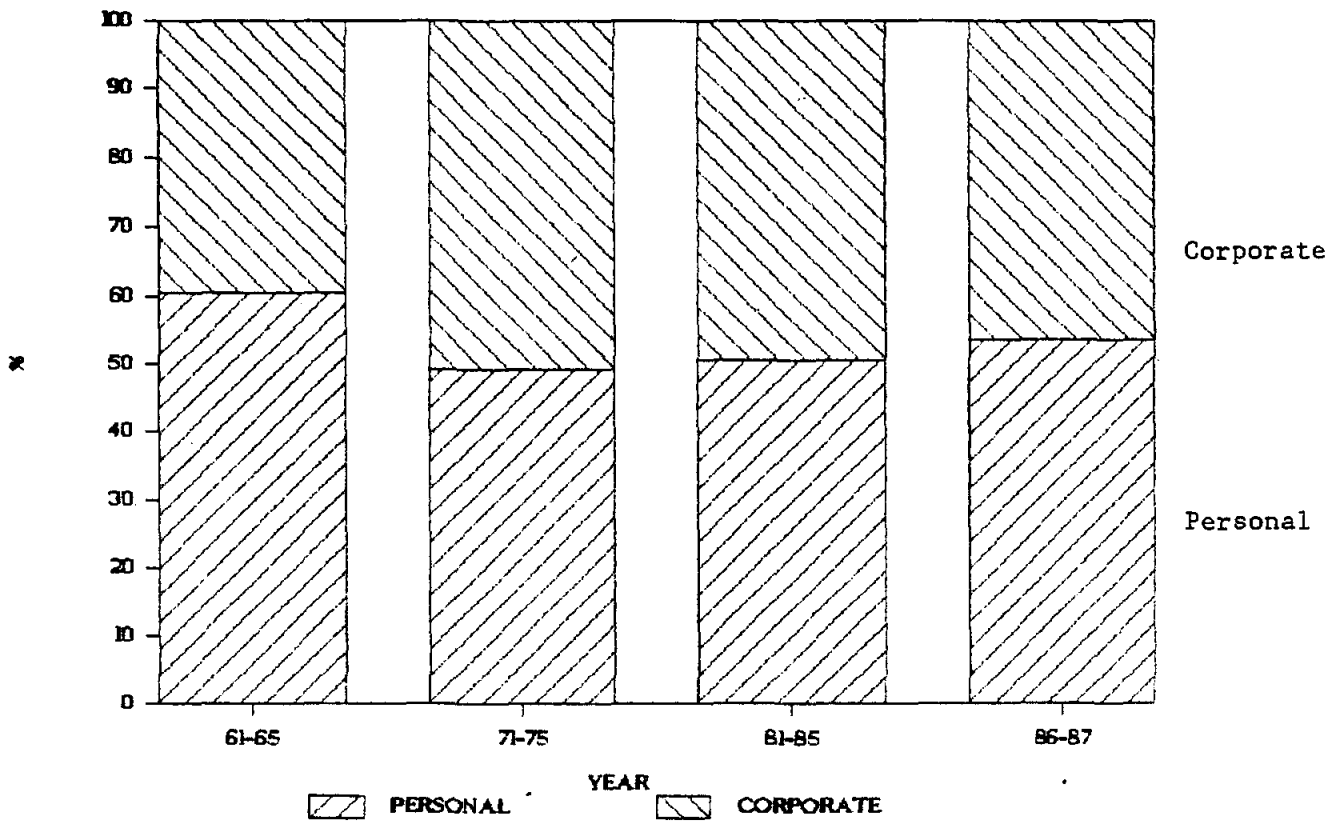
With regard to corporate income tax, we can see that during the 1960s its share was less than that of personal income but became greater during the 1970s and at present their importances are about equal (See Table 2.4 and Figure 2.2). The increased importance of corporate income tax was due in part to the development process whereby business organization with single proprietorship has transformed to joint-stock company. There were also adjustments to increase the tax rates on corporate income in 1972, 1977 and 1980. However, the rates were reduced in 1981 and again in 1986. At present, there are two different rates for companies registered with the Securities Exchange of Thailand (30%) and those not registered (35%). The potential revenue from corporate income taxes is in fact higher than shown by the figures since companies receiving privileges from the Board of Investment are exempted from income tax on net profits for a period between 3 to 8 years as prescribed by the BOI.¹⁵ It should also be noted that corporate income tax is not the only foregone revenue from BOI promoted firms. Some reduction and/or exemption from import duties and business taxes are also granted to them according to approval of the BOI.¹⁶ It was estimated that the foregone revenues from promoted firms in 1980 was about 2614 million baht and since then the figures would be higher.¹⁷

15. Investment Promotion Act. B.E. 2520.

16. Ibid., Sections 28-36.

17. Ministry of Finance, Fiscal and Tax Policy Division (1984), "Study on Fiscal Implication of Investment Incentives and Promotion Efficiency".

FIGURE 2.2: STRUCTURE OF INCOME TAX



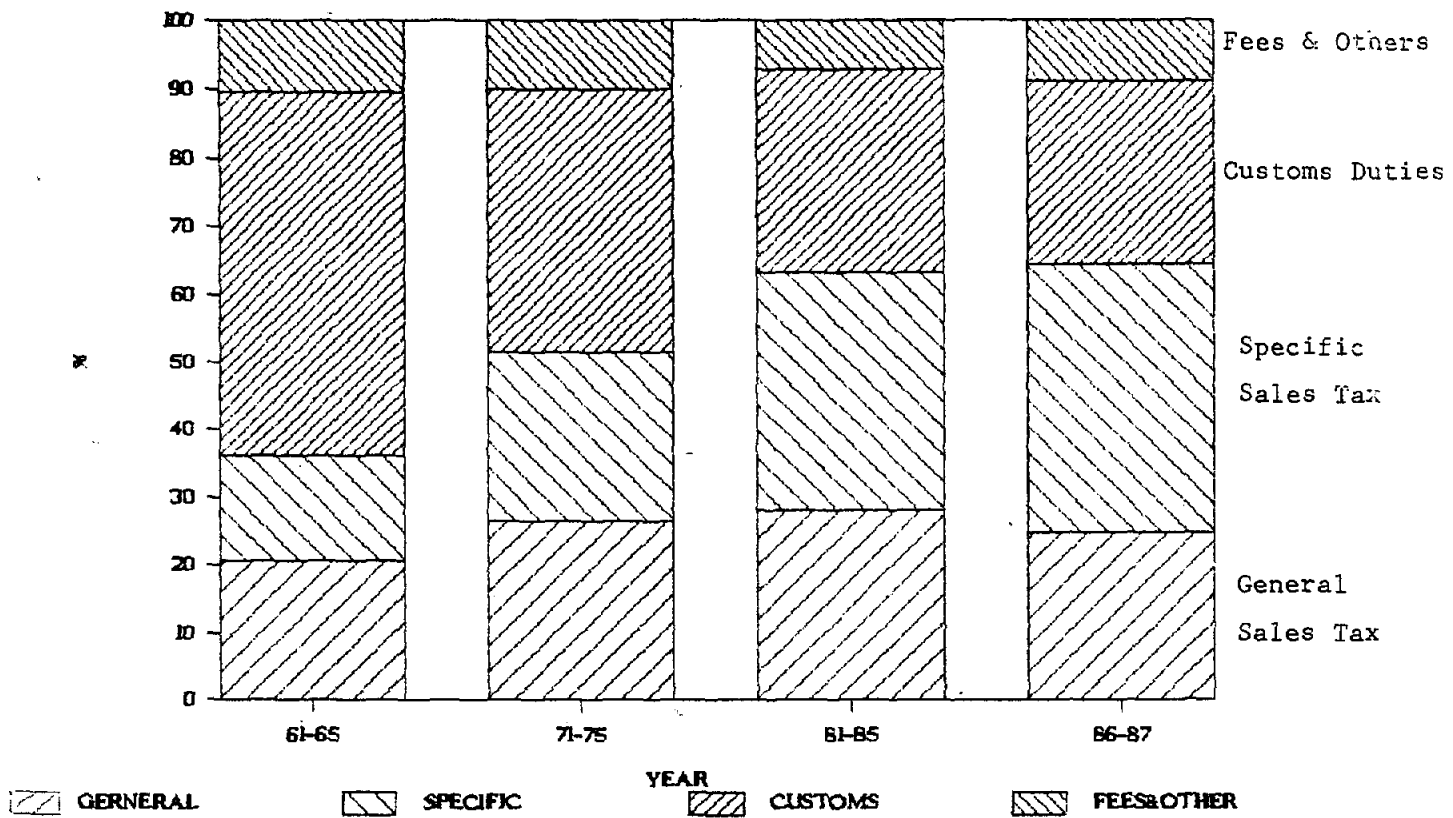
2.3.2 Indirect Taxes

The Thai government has relied on indirect taxes for its main source of revenue since 1961 and indeed even before that. (See Tables 2.1, 2.3 and 2.4). In 1987, the proportion of revenue from indirect taxes accounts for about 80% of the total tax revenue. The major sources of indirect taxes are general sales tax, specific sales tax and customs duties.

From Table 2.4 we can see that the importance of general sales taxes increased a little from around 18.5% of the total tax revenue during 1961-65 to about 19-20% at present. The major source of general sales taxes comes from business taxes while stamp duties account for very little.

On the other hand, the increased importance of tax revenue from specific sales taxes is more prominent as its share in total tax revenue jumped from 13.9% during 1961-65 to about 31% during 1986-87 (see Table 2.4 and Figure 2.3). Within the specific sales taxes category, the taxes on natural resources account for a small portion, in contrast to the excise taxes. The increased revenue from excise taxes comes mainly from the petroleum and related product tax, the tobacco stamp duty and the distilled spirits tax. In 1987 these three items account for about 73% of the excise tax revenues. Y. Singhaampai (1984) noted that the increased revenues of excise taxes come mainly from the rise in the excise tax rates over the years. In particular, the adjustment of excise tax on petroleum and related products from specific rate to ad valorem in 1979 automatically raises the tax revenues with increasing oil prices during the time. In addition, the Ministry of Finance switched 10 more products previously subject to

FIGURE 2.3: STRUCTURE OF INDIRECT TAXES



business tax to the excise tax category in 1985 and thereby enlarging the excise tax.¹⁸

Although the share of tax revenue from customs duties is about equal to that from income taxes during 1986-87, the present contribution of customs duties has reduced by more than half (see Table 2.4 and Figure 2.3). During 1961-65, customs duties accounted for 48% of total tax revenue and followed a steadily decreasing trend, despite its growth, to the level of about 21% at present. The revenue from customs duties comes mainly from the import duties since the share of export duties plus rice premium has reduced from about one third of the customs duties during 1961-65 to only about 3% during 1986-87. The reduced importance of export duties is due to at least two factors. One is the transfer of rice premium revenue to the Farmers' Aid Fund since fiscal year 1978. Another is the industrial policy to promote exports since the early 1970s which leads to reduced tax rates or tax exemption for various export items.

Together the three types of taxes discussed above, namely the general sales tax, the specific sales tax and the customs duties, account for as much as 91% of the indirect taxes. The other sources of indirect taxes are fees and permits and other taxes (including fiscal monopolies) all of which are of minor importance.

18. For more details see P. Limprapat (1985).

2.4 Some Distinct Features of the Tax System

After having looked at the trend and structure of the tax system in Thailand over the past twenty seven years we will discuss some of the distinct features of the present tax system. The discussion here, however, will deal mainly with the aggregate picture and those who are interested in the detailed structure of each type of tax are referred to the study by Chaipat Sakasakul (1987).¹⁹

First, the important feature that we have seen from the previous discussion is the significant reliance of total tax revenue on indirect taxes. Although the importance of indirect taxes has reduced from around 90% during the early 1960's to about 80% at present, the reduction rate is rather slow.²⁰ In fact, the distinction between direct and indirect taxes is not as simple an issue as it may seem.²¹ However, as far as the burden aspect is concerned we may say that direct taxes place the immediate burden on the payers whereas indirect taxes are more easily shifted on to others. As such, direct taxes are a more powerful tool for the purpose of income redistribution since the government can tax more from the rich and less from

19. C. Sahasakul (1987), "Features of the tax System in Thailand." (TDRI research report).

20. The compound annual rate of decrease is only about half a percent.

21. For more detailed discussion see Alan R. Prest, "On the Distinction between Direct and Indirect Taxation", in W.L. David (ed., 1973). Public Finance, Planning and Economic Development. (Macmillan).

the poor and achieve a more equal distribution of income.²² The burden of indirect taxes, on the other hand, is less likely to stay put. Many studies on the incidence of taxes on income have found that the tax revenue system of Thailand is regressive since the ratio of the tax burden to family income falls as such income increases.²³ If true, then the poor will bear more of the burden of indirect taxation. In this study, however, the conclusion appears to be that indirect taxes are fairly neutral, so that the large size of indirect taxation should not be too worrying at least as far as income distribution is concerned.

Second, we can observe from Table 3.7 in chapter 3 that the tax GDP ratio, which is a rough measure of the tax effort of the government, has increased a little from the level of around 11.1% in 1976 to about 13.9% in 1985. Many studies on the tax effort of developing countries during the 1970s found that the tax effort of the Thai government has been low in comparison to countries of about the same level of development.²⁴ The reasons for the low tax effort are several among which is that during the 1960s and 1970s the Thai government, as other less developed countries did, found easy access to external borrowing as a means to close its budget deficit. Not until the second oil shock in 1979 and the

22. Whereas the burden of personal income taxes is most likely to stay with the ones who pay it, the same cannot be argued about corporate income tax since due to certain market environments it can be shifted. However it is quite conventional to classify corporate income tax as direct taxes in the national income account.

23. See more details in chapter 4 of this study.

24. Lotz and Morss (1967), Bahl (1971), Chelliah, Baas and Kelly (1975), Tait, Gratz and Eichengreen (1979).

worldwide recession during 1980-1982 that the Thai government almost faced an external debt crisis amidst the rising interest rates. This might have put pressure on the government to try to increase its tax efforts since then. Another possible reason is that the Thai government is accustomed to use tax measures not only for raising revenues but also for a range of other purposes, for example : as investment incentives, as a protection for domestic industries, as a measure to alleviate the trade deficit (through increased import duties), and as a price stabilization tool. Therefore the revenue objective may have been blurred by other objectives.

Third, the response of tax revenue to the change in GDP in Thailand for the period 1970-1987 is around 1.124% which is not very high. This measure is known as "tax buoyancy" which can be decomposed into the change due to automatic response and the change due to discretionary response. The automatic response of tax revenue to GDP is known as "tax elasticity". Although the concept of tax elasticity sounds simple, its estimate involves some complicated calculation since the effect of the discretionary tax measures on tax revenues have to be removed before we can estimate the tax elasticity.²⁵ Fortunately there have been many studies which attempted to estimate the tax elasticity of Thailand and these are summarized in Table 2.7. We can see that the more current studies show that the total tax elasticity of Thailand is

25. The most widely used adjustment procedures are the proportional adjustment method, the constant rate structure method, and the dummy variable method. See, for example, a brief discussion of these methods in G.A.Mukul and A. Booth (1983; 100-104).

Table 2.7: A Review of Tax Elasticity as Estimated by Various Studies

Author	Estimation Period	Tax Elasticity Estimate	Method
1. IBRD (1974)	FY 1963-1973	1.39	PAM and DVM
2. IBRD (1978)	FY 1970-1977	1.27	n.a
3. IBRD (1983)	FY 1963-1981	1.00	PAM and DVM
4. IMF (n.d.)	FY 1975-1978	1.06	PAM
	FY 1978-1981	0.85	PAM
	FY 1975-1981	0.92	PAM
5. C. Chanruangpen and R. Saikanit (1981; 1982; 1984)	FY 1961-1979	1.0343	DVM
6. C. Musiknisakorn (1983)	FY 1972-1982	1.03	PAM
7. MOF (1983) and P.Savetarun (1985)	FY 1972-1982	1.0427	PAM and DVM
8. MOF (1984) and C. Rarnaisong (1985)	FY 1974-1983	0.9805	PAM and DVM
9. Y. Singhampai (1984)	FY 1974-1983	0.97	PAM

Source : From Table 1 in R. Thanapornpun (1988)

Table 2.8: Buoyancy of Tax Revenues (FY 1970-1987)

Type of Tax	1970-1987 ^a	1974-1983 (from Y.Singhampai 1984)	
	Tax Buoyancy	Tax Buoyancy	Tax Elasticity
Total Tax Revenue	1.124	1.06	0.97
Income Tax	1.409	1.36	1.41
Personal Income Tax	1.370 ^b (1.388)	1.41	1.75
Corporate Income Tax	1.460 ^b (1.383)	1.32	0.95
Indirect Tax	1.062	0.99	0.85
Business Tax	1.054	0.98	0.91
Selective Sales Tax	1.322 ^b (1.367)	1.29	0.70
Import Duties	0.939	0.90	0.82
Export Duties	0.407 ^b (0.441)	0.73	1.14
Others	0.936	0.70	0.91

Note a. Estimated from the equation : $\log (\text{tax revenue}) = a + b \log (\text{GDP})$ by using GDP new series.

b. The regression estimates of these items show autocorrelation which still yield unbiased estimators but not efficient. The Cochrane-Orcutt procedure was used and the corrected estimates are provided in parenthesis.

Source 1. Regression estimates are in Appendix 2
2. Y. Singhampai (1984)

around unity. In fact, the most current study shows that it is less than one.²⁶ The implication from this finding is that as national income increases and without any discretionary changes in tax measures or rates the tax revenue will increase by about the same percentage. However, since there appears to be a decreasing trend in the size of tax elasticity, the need for discretionary tax policies both for increased revenue and for stabilization purposes seems to get more support.²⁷

Table 2.8 provides estimates of the tax buoyancy for each type of tax during 1970-1987 by using the new series of GDP. The author did not attempt to estimate the tax elasticity because taking account of discretionary tax measures and their effects during the period would require more work and time than can be afforded at present. We can see that estimates using the new GDP series yields a bit different values of tax buoyancy than estimates from Y. Singhaampai (1984). The different sample period covered may also have contributed to the difference. But in most cases the estimates are quite close.

Finally, there are other distinct features about the present tax system in Thailand that have been very well analyzed by S. Ruchupan in three sequential articles.²⁸ The

26. R. Thanapornpun (1988 : 23-24) warned against comparability among the various studies due to different sample period, different variables and different methods used.

27. Ibid., p.26.

28. S. Ruchupan, "Looking at the Tax System in Thailand through White Glasses." The first article appears in *Journal of Finance* (Jan-Feb., 1987) pp.38-46; the second article in *Journal of Finance* (March-April, 1987) pp.81-90; the third article in *Journal of Finance* (May-June, 1987) pp.31-45.

main merits of the present tax system pointed out by S. Ruchupan are the following. The concentration index which is measured by the proportion of main tax revenue items is high. The main tax revenue items for Thailand are specific sales tax, business tax, import duties, personal income tax and corporate income tax. The dispersion index is low which means that the number of tax items of minor importance and which are likely to create nuisance is low. There are only 5 tax items which each accounts for less than 1% of the total tax revenue.²⁹

Furthermore, S. Ruchupan argues that the collection lag index is low, the index of tax base on specific unit (specific index) is low, the objectivity index is satisfactory, the enforcement index is good and the cost of collection index is low. He also pointed out the poor characteristics of the tax system as follows. The tax base is narrow; the tax elasticity is low; there is economic double taxation especially with regard to income tax on dividends and business tax; there are too many tax rates resulting in non neutrality; the tax structure creates barriers to exports; the use of tax for industrial protection lacks clarity; tax measures are used for too many purposes; tax policies are unclear and the tax system as a whole is too complicated. Finally, in the third article, he suggests ways to improve the present tax system and the interested readers are referred to his articles (see footnote 28).

29. This is true for the central government revenue but if we account for local government revenue the number of small tax items will increase to 9. See S. Ruchupan (1987), first article, p.41.

CHAPTER 3

COMPARISON WITH SELECTED ASIAN COUNTRIES.

In this chapter, we will compare the tax structure of Thailand with that of other Asian countries. The selected countries are Indonesia, the Philippines, Malaysia and Singapore for the reason that they are our neighboring countries and belong to ASEAN (Association of South East Asian Nations). Brunei, which is a member of ASEAN since 1984, is not included in the study due to lack of data. Korea is included as it represents one of the interesting NICs (Newly Industrialized Countries). However, the other interesting NICs, namely Taiwan and Hong Kong, are not included due to lack of detailed data on government revenue.

The basic data for the countries under comparison are shown in Tables 3.1 and 3.2 for the years 1976 and 1986 respectively. We can see that the six countries provide a variety of different levels of development. At one end we have Indonesia, a large country of 166.4 million population with a per capita income of US \$490 in 1986. At the other end is Singapore, a small country of only 2.6 million people and an industrialized country with a per capita income of US \$7410. In between at the lower end are the Philippines and Thailand and at the upper end are Malaysia and Singapore.

The data on central government revenues of these countries are presented in Tables 3.3 Through 3.7.¹ Although

1. The detailed data are reported in Government Finance Statistics Yearbook published annually by the International Monetary Fund. The latest publication is 1987 which reports

these tables provide both the 1976 and 1985 data for all the six countries, the pattern of differences among these countries in most cases seem not to differ between the above two years. The author finds it convenient to concentrate the discussion on the most current data, namely 1985. We can see from Table 3.3 and Figure 3.1 that tax revenue is the major component of total government revenue in all countries. The picture is a bit different for Singapore where non-tax revenue accounts for almost 30% of total revenue in 1985. Also in Singapore, the government derives a major portion of its revenue from capital by selling land and intangible assets. This is due partly to the rapidly increasing value of land and buildings in such an urbanized city state. In the other five countries capital revenue comprises a very small portion. The major components of the tax revenue in these countries are presented in Table 3.4 and Figure 3.2. We may broadly group domestic taxes on goods and services, taxes on international trade and other taxes as indirect taxes and find that in Thailand the proportion of the indirect tax is highest (75.2%), followed by the Philippines (68.6%), Korea (65.8%), Malaysia (48.2%), Singapore (34.5%) and Indonesia (22.7%). Indonesia is, in fact, an exceptional case as it derives about 70% of the total revenue from corporate income in 1985. Of course, the major contribution of income tax in Indonesia comes from its oil company.

Table 3.5 presents the structure of taxes on income, social security, payroll and property. Social security tax is collected only in Malaysia and Korea while Singapore is the

data up to 1985 for some countries under our comparison. The author found that the data for Thailand reported by IMF do not necessarily correspond to those figures in the BOT worksheets provided in Appendix 1.

Table 3.1: Basic Data for Selected Asian Countries, 1976

	Per capita GNP Us \$ 1986	Ranking ^a	Population (millions) mid 1986	Life expectancy at birth 1986	Distribution of GDP in 1986			Primary Exports as % of Total ^b (1975)
					Agriculture	Industry	Services, etc.	
<u>Lower middle income (average income of this group = us \$ 1501)^a</u>								
Indonesia	240	31	135.2	48	29	34	37	99
<u>Middle income (average income of this group = us \$ 750)^a</u>								
Thailand	380	43	43.0	58	30	25	45	77
Philippines	410	47	43.3	58	29	34	37	83
Korea, Rep. of	670	62	36.0	61	27	34	39	18
Malaysia	860	68	12.7	59	29	30	41	82
Singapore	2700	90	2.3	70	2	35	63	57

Note a. The classification and ranking follow that of the World Development Report (1978). The ranking is with respect to GNP per capita in the ascending order.

b. Primary exports include commodities in SITC 0,1,2,3,4 (food and animals, beverage and tobacco, inedible crude materials, fuels, oils, fats, and waxes)

Source: IBRD, World Development Report 1978, Tables 1,3,7

Table 3.2: Basic Data for Selected Asian Countries, 1986

	Per capita GNP Us \$ 1986	Ranking	Population (millions) mid 1986	Life expectancy at birth 1986	distribution of GDP in 1986			Primary Exports	
					Agriculture	Industry (manufacturing)	Services, etc. as % of Total ^b		
<u>Lower middle income (average income of this group = us \$ 750)^a</u>									
Indonesia	490	42	166.4	57	26	32	(14)	42	79
Philippines	560	44	57.3	63	26	32	(25)	42	40
Thailand	810	55	52.6	64	17	30	(21)	53	58
<u>Upper middle income (average income of this group = us \$ 1890)^a</u>									
Malaysia	1830	75	16.1	69	n.a.	n.a.	n.a.	n.a.	64
Korea, Rep. of	2370	85	41.5	69	12	42	(30)	45	9
Singapore	7410	94	2.6	73	1	38	(27)	62	33

Notes a. The classification follows that of the World Development Report (1988).

The ranking is with respect to GNP per capita in the ascending order.

b. Primary exports include commodities in SITC 0,1,2,3,4. (food and live animals, beverages and tobacco, inedible crude materials, oils, fats, and waxes, mineral fuels, lubricants and related materials)

Source: IBRD, World Development Report 1988, Tables 2.1, 2.3, 3.4

Table 3.3: Structure of Government Revenues in Selected Asian Countries: 1976, 1985.

Countries	1976					1985				
	Current Revenue (%)			Capital Revenue	Value of Total Revenue In Domestic Currency (=100%) ^a	Current Revenue (%)			Capital Revenue (%)	Value of Total Revenue In Domestic Currency (=100%) ^a
	Tax	Non-Tax	Total			Tax	Non-Tax	Total		
<u>Lower Middle Income</u>										
1. Indonesia	93.2	6.8	100.0	0.0	2,968	87.3	12.7	100.0	0.0	20,347
2. Philippines	85.57	13.55	99.9 ^b	0.1	17,895	89.0	11.0	100.0	0.0 ^b	67,136
3. Thailand	88.71	10.03	98.74	1.26	42,123	88.85	11.14	99.99	0.01	162,616
<u>Upper Middle Income</u>										
4. Malaysia	89.44	10.35	99.79	0.21	6,128	83.38	16.12	99.50	0.5	20,878
5. Korea, Rep. of	91.05	8.40	99.45	0.55	2,324.9	86.93	11.74	98.67	1.33	13,923
6. Singapore	68.63	26.94	95.57	4.43	3,497	43.34	29.59	72.93	27.07	14,764

Note: a. Data for Indonesia in Billions of Rupiah

Philippines Millions of Pesos

Thailand Millions of Baht

Malaysia Millions of Ringgit

Korea Billions of Won

Singapore Millions of Singapore Dollars

b. In 1976 There is an item "adj. to current revenue" accounting for 0.76% of total revenue in the Philippines. And in 1985 there is some negligible amount of capital revenue.

Source: Calculated from data in IMF, Government Finance Statistics Yearbook 1983, 1986, 1987.

FIGURE 3.1: STRUCTURE OF GOVERNMENT REVENUE
IN SELECTED ASIAN COUNTRIES 1985

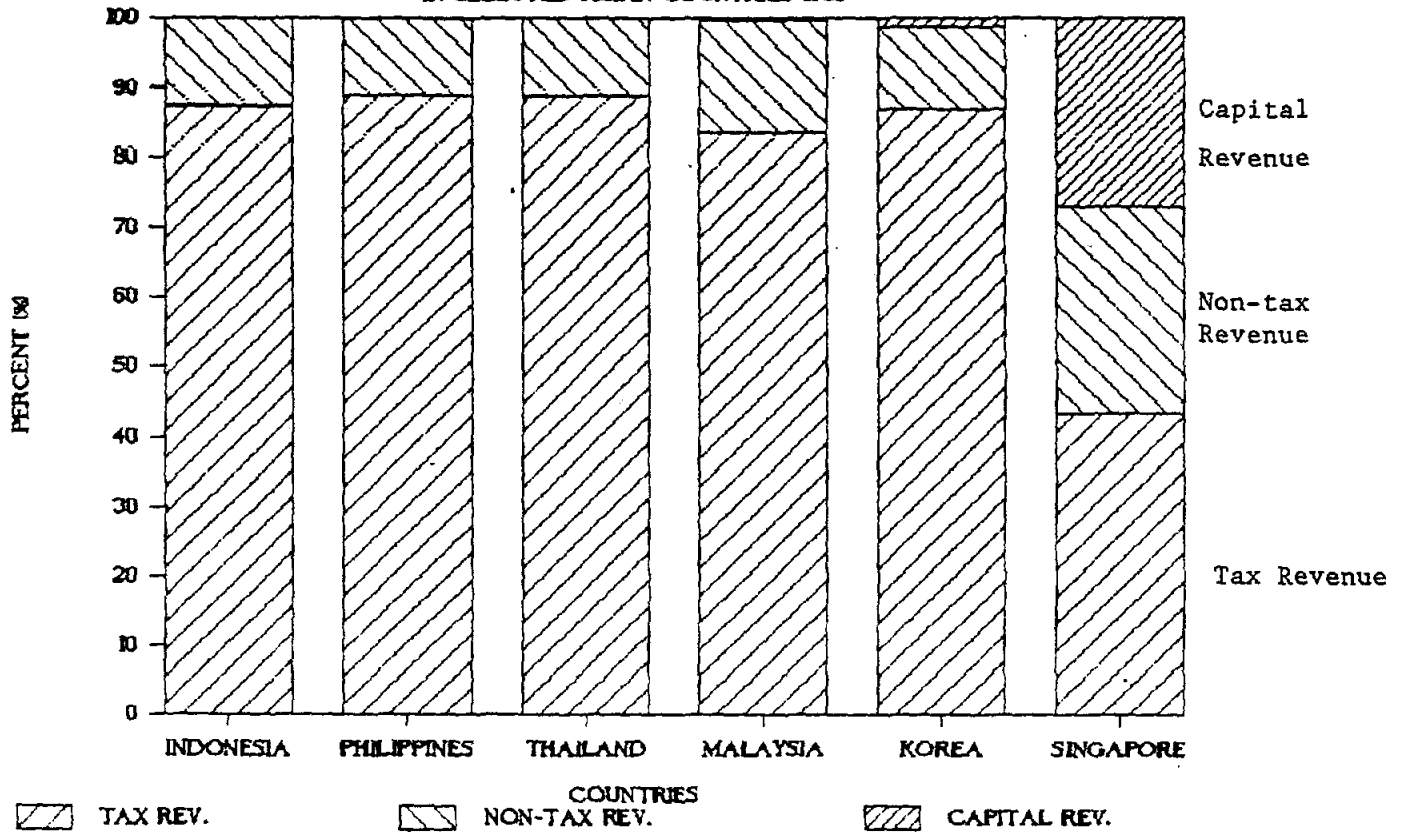


Table 3.4(a): Structure of Tax Revenue in Selected Asian Countries 1976

Country	Tax on Income Profits etc.	Social Security Contributions	Taxes-Payroll or Manpower	Taxes on Property	Dom. Taxes on Good & Serv.	Taxes-Internal' Trade, Transac.	Other Taxes	Total
<u>Lower Middle Income</u>								
1. Indonesia	71.34			1.63	15.03	11.56	0.40	100.00 ^a
2. Philippines	24.39			1.01	40.27	32.39	1.95	100.00
3. Thailand	18.22			1.26	52.05	27.78	0.70	100.00
<u>Upper Middle Income</u>								
4. Malaysia	37.60	0.47		0.58	23.83	36.42	1.09	100.00
5. Korea, Rep.of	28.49	0.94		3.12	47.00	16.25	0.69	100.00 ^b
6. Singapore	47.63		2.54	15.63	20.46	11.38	2.37	100.00

Table 3.4(b): Structure of Tax Revenue in Selected Asian Countries 1985

Country	Tax on Income Profits etc.	Social Security Contributions	Taxes-Payroll or Manpower	Taxes on Property	Dom. Taxes on Good & Serv.	Taxes-Internal' Trade, Transac.	Other Taxes	Total
<u>Lower Middle Income</u>								
1. Indonesia	75.77			1.26	18.42	3.70	0.56	100.00 ^a
2. Philippines	30.51			0.91	41.78	24.80	1.99	100.00
3. Thailand	23.33			1.49	49.41	24.99	0.78	100.00
<u>Upper Middle Income</u>								
4. Malaysia	50.59	0.71		0.51	21.21	25.03	1.95	100.00
5. Korea, Rep.of	28.70	1.71		0.67	49.03	16.11	0.62	100.00 ^b
6. Singapore	45.36		3.73	16.44	23.19	6.11	5.17	100.00

Note a. In Indonesia there is an item "adj. to tax revenue" which accounts for 0.04% of Total tax revenue in 1976 and 0.29% in 1985

b. In Korea, the unallocable tax revenue in 1976 accounts for 3.51% of total tax revenue and not reported in 1985 although about 3.16% is missing.

Source: Same as Table 3.3

FIGURE 3.2: STRUCTURE OF TAX REVENUE

IN SELECTED ASIAN COUNTRIES 1988

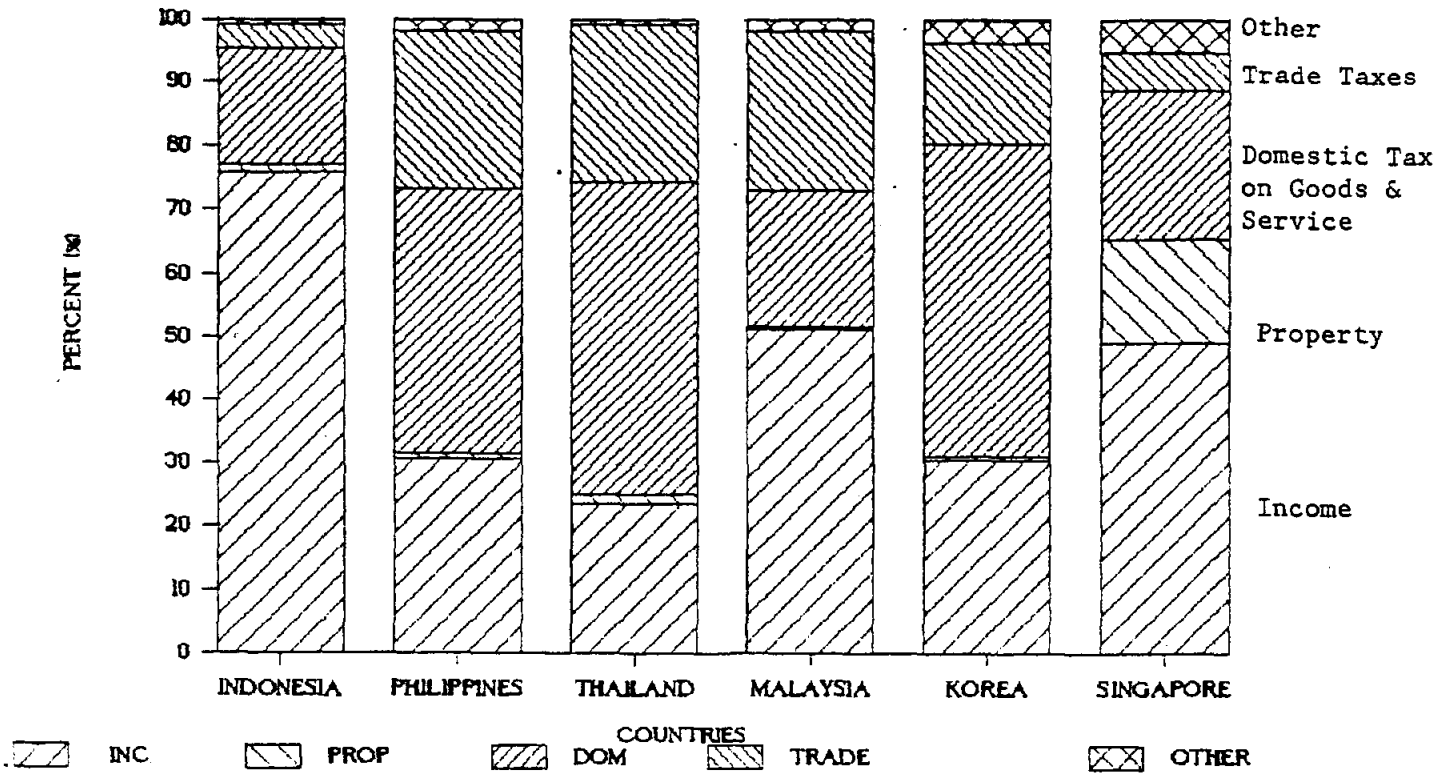


Table 3.5(a): Proportion of Taxes on Income, Social Security, Payroll and Property in Selected Asian Countries : 1976

Country	Tax on Inc., Profits, Cap. Gains				Social Security Contributions	Taxes-Payroll or Manpower	Tax on Property	Sub Total As % of Total Revenue
	Individual	Corporate	Other Unalloc. Tax on Inc.	Total				
<u>Lower Middle Income</u>								
1. Indonesia	3.14	62.88	5.32	71.34	-	-	1.53	72.97
2. Philippines	12.10	12.10	0.19	24.39	-	-	1.01	25.40
3. Thailand	8.13	10.09	-	18.22	-	-	1.26	19.48
<u>Upper Middle Income</u>								
4. Malaysia	9.12	28.46	0.02	37.60	0.47	-	0.58	38.65
5. Korea, Rep.of	17.22	11.27	-	28.49	0.94	-	3.12	32.55
6. Singapore	n.a	n.a	-	47.63	-	2.54	15.63	65.80

Table 3.5(b): Proportion of Taxes on Income, Social Security, Payroll and Property in Selected Asian Countries : 1985

Country	Tax on Inc., Profits, Cap. Gains				Social Security Contributions	Taxes-Payroll or Manpower	Tax on Property	Sub Total As % of Total Revenue
	Individual	Corporate	Other Unalloc. Tax on Inc.	Total				
<u>Lower Middle Income</u>								
1. Indonesia	3.80	70.68	1.29	75.77	-	-	1.26	77.03
2. Philippines	9.53	15.67	5.31	30.51	-	-	0.91	31.42
3. Thailand	13.29	10.04	-	23.33	-	-	1.49	24.82
<u>Upper Middle Income</u>								
4. Malaysia	10.05	40.54	-	50.59	0.71	-	0.51	51.81
5. Korea, Rep.of	15.24	13.46	-	28.70	1.71	-	0.67	31.08
6. Singapore	n.a	n.a	-	45.36	-	3.73	16.44	65.53

Source : Same as Table 3.3

Table 3.6(a): Proportion of Domestic Taxes on Goods & Services and International Trade Tax in Selected Asian Countries 1976

Country	Dom. Taxes on Goods & Serv.			Taxes-Internat'l Trade, Transac			Other Taxes	Total Indirect Taxes	
	Gen.Sales, Turnover or V.A.T.	Excises	Others	Subtotal as % of Total Tax Revenue	Import Duties	Export Duties			Subtotal as % of Total Tax Revenue
<u>Lower Middle Income</u>									
1. Indonesia	9.65	4.77	0.61	15.03	9.25	2.31	11.56	0.40	26.99
2. Philippines	18.56	19.56	2.15	40.27	28.68	3.71	32.39	1.95	74.61
3. Thailand	23.82	21.30	6.93	52.05	24.33	3.45	27.78	0.7	80.53
<u>Upper Middle Income</u>									
4. Malaysia	5.87	10.03	7.93	23.83	17.81	18.43	36.42 ^a	1.09	61.34
5. Korea, Rep.of	12.35	23.55	11.10	47.00	16.25	-	16.25	0.69	63.94
6. Singapore	9.92	2.79	7.75	20.46	11.38	-	11.38	2.37	34.21

Table 3.6(b): Proportion of Domestic Taxes on Goods & Services and International Trade Tax in Selected Asian Countries 1985

Country	Dom. Taxes on Goods & Serv.			Taxes-Internat'l Trade, Transac			Other Taxes	Total Indirect Taxes	
	Gen.Sales, Turnover or V.A.T.	Excises	Others	Subtotal as % of Total Tax Revenue	Import Duties	Export Duties			Sub total as % of Total Tax Revenue
<u>Lower Middle Income</u>									
1. Indonesia	13.10	5.32	-	18.42	3.41	0.29	3.7	0.56	22.68
2. Philippines	8.86	23.47	9.45	41.78	22.63	1.67	24.80 ^b	1.99	68.57
3. Thailand	20.51	24.67	4.23	49.41	22.89	1.81	24.99 ^c	0.78	75.18
<u>Upper Middle Income</u>									
4. Malaysia	7.08	7.90	6.23	21.21	14.47	10.56	25.03	1.95	48.19
5. Korea, Rep.of	23.97	14.91	10.15	49.03	16.11	-	16.11	0.62	65.76
6. Singapore	9.38	3.05	10.76	23.19	6.11	-	6.11	5.17	34.47

- Note a. In Malaysia there is a tax on exchange profits which accounts for 0.18% of total tax revenue in 1976.
- b. In the Philippines there is other tax on international transactions which accounts for 0.5% of total tax revenue in 1985
- c. In Thailand there is other tax on international transaction which accounts for 0.29% of total tax revenue in 1985

Source: Same as Table 3.3

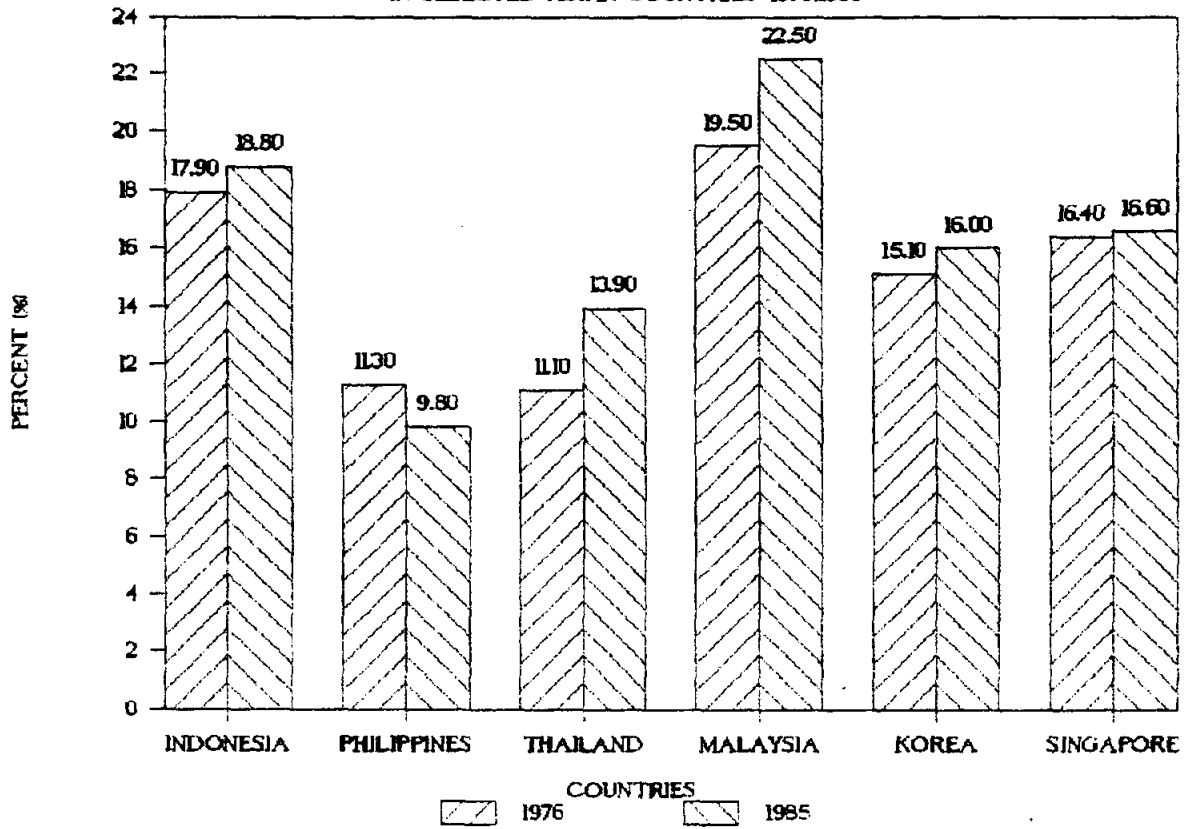
Table 3.7: Tax-GDP Ratio in Selected Asian Countries: 1976, 1985

Country	1976			1985		
	Tax Revenue	GDP	Tax/GDP	Tax Revenue	GDP	Tax/GDP
<u>Lower Middle Income</u>						
1. Indonesia	2,767.0	15,467	17.9	17,761	94,492	18.8
2. Philippines	15,312.0	135,270	11.3	59,747	609,460	9.8
3. Thailand	37,366.0	337,630	11.1	144,483	1,041,350	13.9
<u>Upper Middle Income</u>						
4. Malaysia	5,481.0	28,085	19.5	17,409	77,547	22.5
5. Korea, Rep.of	2,116.6	133,996	15.1	12,104	75,511	16.0
6. Singapore	2,400.0	14,651	16.4	6,400	38,521	16.6

Note: Data for Indonesia in Billions of Rupiah
 Philippines Millions of Pesos
 Thailand Millions of Baht
 Malaysia Millions of Ringgit
 Korea Billions of Won
 Singapore Millions of Singapore Dollars

Source: Tax revenue from IMF, Government Finance Statistics Yearbook 1983,1986,1987
 and GDP from IMF, International Financial Statistics 1987 Yearbook

FIGURE 3.3: TAX/GDP RATIO
IN SELECTED ASIAN COUNTRIES 1976, 1985



only country with payroll or manpower tax collection. In any case, these taxes comprise a very small portion since taxes on individual income and corporate profits are much larger. If we may broadly classify these taxes as direct taxes then Thailand ranks lowest in its collection (24.8%) just as it ranks highest in its collection of indirect taxes. Furthermore, the proportion of taxes collected from corporate income is also lowest in Thailand, about 10%, while the figure for Korea is 13.5%, the Philippines 15.7%; and Malaysia 40.6%. The income tax data for Singapore are not separated into individual and corporate and, therefore, cannot be compared. With respect to individual income tax, Thailand appears to do better as the individual income tax accounts for as much as 13.3% of the total tax revenue in 1985 while it is only 3.8 % in Indonesia, 9.5 % in the Philippines, 10.1 % in Malaysia and 15.2 % in Korea.

The structure of indirect taxes is presented in Table 3.6, from which the following patterns can be observed. First, the level of dependence on the indirect tax revenue among all countries appears to be decreasing between 1976 and 1985. Second, the decreasing trend comes evidently from the reduced importance of the taxes on international trade whereas the share of domestic taxes on goods and services increased for most countries except for Thailand and Malaysia where it decreased a little. It should also be noted that the substantial part of international trade taxes comes from import duties for all countries. In fact, Korea and Singapore levy no duty on their exports. Third, indirect taxes still account for a substantial part of the total revenue with the exception of Indonesia which derives its major revenue from income tax of the oil company. The exception also holds for Singapore where

indirect taxes account for only one-third of the total tax revenue due to the importance of income and property tax.

From the above discussion we can see that for its level of development Thailand has relied a bit too much on indirect taxes, as its per capita income is higher than Indonesia and the Philippines, but it has a greater reliance on indirect taxes than these two countries. Many studies of the relationship between tax structure and development found that the share of direct taxes follows a U-shaped pattern.² At very low income levels, direct taxes (from traditional sector such as land and poll taxes) are likely to be prominent. At middle income levels, indirect taxes from international trade and domestic goods are expected to be important. And at high income levels direct taxes are expected again to dominate as widespread use of personal and corporate income taxes becomes possible. Although the trend for Thailand indicates the increasing importance of direct taxes, the rate of increase appears slow. Indeed the present share of direct taxes (24.8%) in total tax revenue must be considered low when we make cross-section comparison with the neighboring Asian countries.³

Another issue, already pointed out in chapter 2 (section 2.4) but worth noting again in comparison to the other Asian countries, is the ratio of tax to gross domestic product. This ratio is commonly used as a rough measure of the tax effort of a country. We have noted that the tax effort of the Thai

2. H.H. Hinrichs (1966) and R.A. Musgrave (1969).

3. In Hinrichs (1966 : 101), Thailand was found with the data in 1958 to be at the bottom of the U-shaped pattern of the direct/indirect tax function among countries at various development stages.

government has been low during the 1970s as reported by various studies. The data on tax-GDP ratio of six countries under study as shown in Table 3.7 and Figure 3.3 also bears out this fact. In 1976, the tax-GDP ratio of Thailand is lowest among the six countries. In 1985, the ratio increased to 13.9% but still lower than the average of the six countries (about 16.3%). It should also be noted that although the tax-GDP ratio is generally expected to increase with per capita income, there is wide variation across countries. From our sample, Indonesia has the lowest income per capita but its tax-GDP ratio is higher than that of Singapore which has per capita GNP of about 15 times higher.

The fact that there is great variation of tax systems that cannot be explained by per capita GNP alone is not surprising. Countries differ not only in economic and political environments but also in the government's policies and efforts to achieve various objectives.

CHAPTER 4
REVIEW OF SOME STUDIES OF TAXES ON
THE DISTRIBUTION OF INCOME.

In the field of public finance it is well known that both tax and expenditure measures may be designed to perform at least three major distinct functions, namely the allocation function, the stabilization function, and the distribution function.¹

The failure of the market system to provide for social or public goods gives rise to the allocation function of the government. We may include regulatory measures as part of the allocation function, but these are not primary concerns of the budget. The stabilization function involves a set of well known macroeconomic objectives : maintaining low unemployment, price stability, economic growth and reasonable external balance. Although these two functions are very important to the economy, they are beyond the scope of this study. In this chapter we will review the distributional impact of the tax structure. In fact, distribution issues are normally a point of controversy in the determination of public policy. Individual views on what constitutes a fair or just distribution differ. However, most would agree that some adjustments to the existing distribution are required at least for the bottom group of the income scale to have adequate basic needs. Tax and expenditure measures are among many instruments often used to achieve what the society (or policy makers) conceives to be a "better" or more "acceptable" distribution.

1. Musgrave, R.A. and P.B. Musgrave (1984 : 6-15).

In fact all policy actions will have some redistributive impacts even when the distributive objectives are not the primary policy target. Although taxation is a powerful instrument for income redistribution, it is not quite evident that the Thai government has used taxation for this purpose. We will first briefly investigate the theoretical implications of various taxes on distribution and then review some empirical studies regarding such matter for Thailand.

4.1 Principles of Tax Incidence²

Tax incidence refers to the way in which the burden of taxation is shared among individual households. Though taxes may be collected from business firms (on payroll or on value of sales), most of the ultimate burden can be traced back to individual households in their capacity as owners of the firms, as employees, or as consumers of the products.

Taxes collected by the government have many effects, some of the important ones are as follows. First, they may affect the prices of products, and hence affect the prices that consumers have to pay for the products. The indirect taxes are of this type. Second, they may favor one sector of production compared to another, eg. the protection of import substitution

2. For a detailed discussion of various aspects of this issue see Musgrave, R.A. and P.B. Musgrave (1984) Public Finance in Theory and Practice. (4th edition), chapters 10-13.

industries. This will lead to more productive resources flowing to these sectors that otherwise, or to higher prices for the factors used intensively in the sector, and benefit the groups in the economy earning most of their income from these sectors. Third, taxes may lead to changes in factor supplies through a change in the incentive structure. Thus, a high marginal income tax rate may lead to less supply of labor than otherwise. Fourth, taxes generate revenue for the government, which is used to finance government expenditures. The direct impact is to reduce the resources available to the private sector, but if government expenditures benefit the households, then some of the resources will flow back to the economic system. Fifth, because taxes may lead to distortions in the economy, there may be efficiency losses or "excess burden."³ Sixth, if increases in taxes are not matched by increases in government expenditures, then there will be multiplier effects tending to reduce aggregate demand and possibly employment.

It is then obvious that the economic incidence of a tax can be quite different from the statutory incidence due to the process of shifting tax burden by individuals and firms. The shifting, of course, depends on the structure of the economic structure, and also on the time needed for adjustments to be possible.

3. Musgrave and Musgrave (1984 : 248-249) provide an example as follows. A \$ 1 billion revenue collected from a tax on automobiles interferes with consumer choice. Some people may forego a car purchase because of the tax payable. They pay no tax but their budget choice is less satisfactory and they suffer a burden which is not reflected in the amount of tax revenue. Others may buy a cheaper car and pay a tax on the reduced amount. In both cases, consumers suffer a burden which is greater than the amount of tax revenue. This excess burden is sometimes called "dead weight loss".

In a partial equilibrium analysis, the tracing out of tax shifting is limited to the particular market of the taxed item. In this regard, the elasticities of demand and supply of the taxed products or taxed factors determine the magnitude of adjustments, and the distribution of the burden between sellers and buyers. In a general equilibrium framework, the analysis would account for all the interactions among various markets, because the economy is an interdependent system in which all prices and quantities are related to each other. Changes in the price and quantity of one product or factor affect those of others. The study within the general equilibrium framework, given that the model reflects the true behavior of the economy, is therefore to be preferred to a partial equilibrium analysis. However, in Thailand most previous studies of the redistributive impact of the tax system have been in the nature of partial equilibrium analysis.⁴

Although the partial equilibrium analysis does not trace out all the indirect effects which, of course, take time to occur, it still can be useful in seeing how the primary direct burden of tax may be distributed. There are cases where the direction on distribution discerned from an examination of the direct effects give similar answers to that from a full general equilibrium analysis. However, some of the conclusions from a partial analysis can also be misleading.⁵

4. The main exception being the study of distributional impact of some policies in Amranand and Grais (1984).

5. See Devarajan, Fullerton, and Musgrave (1980) for some comparisons of the direct approach and the general equilibrium approach.

In Thailand, most of the government revenue comes from indirect taxation, as discussed in the previous chapters. Whereas direct taxes can be designed to suit the characteristic of the payer, eg. the income tax rate can be designed to increase as the level of income of the tax payer increases, indirect taxes do not distinguish between the consumer of the products. Whether a person is rich or poor makes no difference in the sales tax that he has to pay for a packet of cigarette, for example. The impact of personal income tax on income distribution is fairly obvious. For indirect taxes, however, the impact on the prices of commodities and factors of production, and the structure of household consumption have to be examined with care before reaching a judgement on their distributional impact. However, because indirect taxes are so much larger than direct taxes, the assessment of their distributional impact takes on great importance.

4.2 Review of Some Empirical Studies of Tax Incidence in Thailand⁶

There have in fact been many studies concerning tax incidence in Thailand. Those which use the descriptive approach depended upon theoretical analyses and logical deductions. They therefore can only point out who are the most likely to bear the substantial part of the tax burden, but cannot provide any estimated magnitude. As such they appear

6. A substantial part of this section benefits from the research work by R. Thanapornpun (1984), Chapter 5, pp.251-428. The author also would like to thank R. Thanapornpun for providing very useful data.

more abstract than the studies which use the quantitative approach and offer some estimated number of the redistributive effect. In this section, we will review the results of some quantitative studies. For a comprehensive review and criticism of all research works on this subject, the reader is referred to R. Thanapornpun (1984).

Prior to 1975, quantitative studies of the tax burden dealt with a particular type of tax and most were concerned with the impact of the rice premium.⁷ Many studies argued that because the foreign demand for Thai rice is price elastic while the supply of Thai rice is price inelastic a substantial part of the burden of the rice premium should rest with the farmers. However, empirical studies on the issue of price elasticity of demand and supply provided a wide range of estimates. A. Siamwalla, et al. (1981) calculated the total burden of the rice export tax in 1980 and based on same values of elasticities found that about 21% of the burden would fall on the foreign consumers and 79% would fall on farmers.⁸ P. Trairatvorakul (1984: 26) also provided an estimate of the effect of the increase of rice price on income distribution by using the 1975/76 socio-economic survey, but found the effect to be small. The rice growers would gain at the cost of non rice households. However, within the rice grower group, the ones which have marketable surplus would gain most but the marketable surplus comes mostly from larger farms.

7. R. Thanapornpun (1984) also provides a review of studies regarding tax burden of the rice premium in chapter 7, pp.527-552 and in R. Thanapornpun (1985 d).

8. Price export tax includes rice premium, export tax and rice reserve requirement. $E_{cd} = 0$, $E_{ef} = 2$, $E_{sq} = 0.1$ and $E_{sx} = 0.53$. See A. Siamwalla, et al. (1981).

Since 1975 there have been many studies on the redistributive impact of the whole tax system by making use of the socio-economic survey data for the following years 1962/63, 1968/69, 1971/72 and 1981. However, it is very difficult, if not impossible, to make intertemporal comparison of the results from all these studies since they differ greatly in many basic assumptions used in arriving at the estimates of the redistributive effect of the tax system. The basic differences lie not only in the assumptions about the burden of various types of taxes but also in the concept of income and classes of income groups.

Among these various studies, the studies by Medhi Krongkaew (1975; 1976; 1980) and Pichit Likitkijsomboon (1985) are examined here, for the reason that they are more similar in their assumptions and concept of income used than all other studies.⁹ Both M. Krongkaew and P. Likitkijsomboon make use of the socio-economic survey data in different years and employ the following methodology.

The first step is a study of the distribution of household income to get at the percentage of income received by households in different income classes. From this a measure of income concentration, the Gini coefficient, is computed to represent the pre-tax distribution of income. At this stage the concept of household income is important as resources available to households include not only money income but also income in kind and other imputed income. We may call the total

9. P. Likitkijsomboon's study was an M.A. Thesis under the advice of M. Krongkaew. It should be noted that while M. Krongkaew (1975) used all samples in the 1962-63 and 1968-69 surveys P. Likitkijsomboon (1985) used only a 10 % random sample from the 1981 survey.

resources as adjusted income. P. Likitkijsomboon used the adjusted income concept while M. Krongkaew used both concepts. It should be noted that their adjustments of money income to get the household income base differ slightly.¹⁰

Next, the absolute tax burden on each income class is computed. At this stage the researcher's assumptions about the burden distribution of each type of tax are very crucial. Both studies allocated the burden of personal income tax fully to the taxpayers. The corporate income tax was assumed to be fully shifted to consumers or household groups. All types of indirect taxes, with the exception of export taxes, were assumed to be shifted to consumers according to the pattern of their consumption expenditure by types of the taxed products. Export taxes were assumed to be shifted backward to producers.¹¹ It should be noted that both included non-tax revenue and assumed it to be borne by consumers according to their expenditure patterns.¹²

At the third stage, the after-tax income of various households by income classes were computed by subtracting the absolute tax burden from household's income. The effective

10. See notes in Tables 4.1 and 4.2.

11. There is some slight difference between the two studies in that M. Krongkaew assumed the burden of export duties to be borne by exporters and the burden of rice premium by farmers whereas in P. Likitkijsomboon it was only stated that the burden of export taxes was shifted to producers. See M. Krongkaew (1975 : 120-122) and P. Likitkijsomboon (1985 : 57).

12. Non-tax revenues include sales of property and assets, sales of services, income from state enterprises and other miscellaneous items. Theoretically they should not be considered "tax burden" due to their quid pro quo nature.

rates of tax among various income class and the post-tax Gini coefficient were obtained.

Finally, the comparison of the pre-tax and post-tax Gini coefficients would give an indication of the impact of tax on income redistribution.

Tables 4.1 and 4.2 present the effective tax rates based on adjusted income of households for the years 1963, 1969 and 1981. According to these studies, the average effective tax rate for all income classed was 11.3% in 1963, 12.7% in 1969 and 31.8% in 1981. It should be noted that because the adjustment of income in 1963 and 1969 by M. Krongkaew included indirect taxes while that in P. Likitkijsomboon did not. This implied that the effective tax rates in M. Krongkaew's study as summarized in Table 4.1 are underestimated in comparison to the latter study.

Nevertheless, within each year of 1963 and 1969 we may say that the tax structure did not clearly show regressivity in 1963 and 1969. M. Krongkaew (1975 : 134) described this result as proportional. However, in both years, the lowest income bracket bore a higher tax burden than the national average while the highest income bracket bore a lower tax burden than the national average.

The effective tax rates for 1981 (Table 4.2) as calculated by P. Likitkijsomboon show a general regressive pattern with some fluctuation. This was the case for all regions and for the whole kingdom. The lower income groups tend to bear higher effective rates than the higher income groups.

Table 4.1

Effective Tax Rates by Income Class Based on Adjusted Income : 1963, 1969
(%)

Income Class (baht / year)	1963	1969
≤ 3,000	12.3	13.0
3,000-5,999	12.1	11.5
6,000-8,999	11.1	12.7
9,000-11,999	11.1	13.5
12,000-14,999	11.8	15.1
15,000-17,999	11.8	14.6
≥ 18,000	10.1	12.3
average	11.3	12.7

Note: Adjusted income is money income adjusted for income in kind, imputed rent, corporate retained earnings, and indirect taxes as reported in the national account.

Source: Medhi Krongkaew, "The Income Redistributive Effects of Taxes and Public Expenditure in Thailand : An Intertemporal Study". Ph.D. Dissertation, Michigan State University, 1975, pp.132-133.

Table 4.2

Effective Tax Rates by Income Class Based on Adjusted Income : 1981

(%)

Income Class (baht/year)	North	Northeast	Central	South	Bangkok	Whole Kingdom
≤ 1,395	78.8	41.0	45.1	80.2	78.5	53.7
1,395-3,974	43.7	50.9	57.3	77.1	79.4	52.6
3,975-8,000	29.2	34.7	38.2	61.4	61.2	37.6
8,000-13,269	38.5	28.9	36.4	30.9	43.2	34.3
13,270-20,399	26.3	24.4	39.0	27.7	70.9	34.5
20,400-29,999	23.8	28.0	27.0	36.0	48.0	31.2
30,000-38,899	24.2	24.7	26.0	41.5	47.3	33.5
35,900-52,299	26.8	19.5	28.6	40.7	45.3	33.5
52,300-81,019	25.3	18.6	26.1	24.5	46.7	29.9
≥81,020	15.3	14.5	27.4	24.6	43.0	23.7
Average	24.3	23.7	30.6	31.9	45.7	31.8

Note: Adjusted income is money income adjusted for income in kind, imputed rent, and corporated retained earnings.

Source: Pichit Likitkijsomboon, "Taxation and Income Distribution in Thailand : A Case Study for 1981". M.A.Thesis, Faculty of Economics, Thammasat University, 1985, p.93.

Table 4.3

Gini Coefficients of Income Distribution : Pre Tax and Post Tax
1963, 1969, 1972, 1981

Year	Money Income		Adjusted Income	
	Pre-Tax	Post-Tax	Pre-Tax	Post-Tax
1963	0.5627	0.6102	0.4559	0.4605
1969 ^a	0.5269	0.5613	-	-
1969 ^b	0.5550	0.5847	0.4822	0.4819
1972	0.6051	0.6476	-	-
1981	-	-	0.5275	0.5607

Source : 1. Estimates of 1963 and 1969 (b) from M. Krongkaew (1975 : 143)
 2. Estimate of 1969(a) from M. Krongkaew (1976 : 183)
 3. Estimate of 1972 from M. Krongkaew (1980 : 59)
 4. Estimate of 1981 from P. Likitkijsomboon (1985 : 94)

Table 4.3 presents the pre-tax and post-tax Gini coefficients for the year 1963, 1969, 1972 and 1981 as calculated in the studies of M. Krongkaew (1975; 1976; 1980) and P. Likitkijsomboon (1985). It can be seen that the Gini coefficients increased with the post-tax distribution for all years under study. This was the case for both money income and adjusted income. The tax effect in the case of adjusted income for 1969, however, appeared insignificant since the post-tax Gini coefficient changed by about only half a percent indicating almost neutrality of the tax system. In all other cases, the post-tax Gini coefficients are significantly greater than the pre-tax ones.

The implication of the above findings is that the tax system (or the revenue system-to be strictly precise) of Thailand contributed to the worsening of income inequality during 1963 and 1981. It was also found in these studies that personal income tax was the only progressive element in the tax structure while all other types of taxes were regressive.

There are several difficulties with the above studies that should be pointed out. First, the allocation of all corporate taxation to the consumer groups seems to be very unrealistic. In the pioneering study by Harberger of the general incidence of the corporate income tax, it was found that, under plausible assumptions about various elasticities, most of the tax are borne by the corporate sector, and hence those who earned more of their income from property income (dividends and interests). Subsequent extensions of the Hargerger analysis, showed that only if the production functions have substitution elasticities very close to zero is

it likely that wages would bear a higher burden of the tax.¹³ Even in this case, the impact is on factor incomes, so that the corporate income tax are likely to be borne by either capital or labor in the corporate sector. Those who derive income from the profits of the corporate sector, whether as share holders, or as workers in the relatively large firms tend to be from the better off households. Thus, the assumptions used in the above studies would tend to overestimate any regressive impact of the tax system.

Another problem, particularly in the study by Likitkijsomboon is that the data are completely inconsistent with the National Accounts. According to the National Accounts in 1981, total government revenue was less than 20% of all household income. It is inconceivable that effective tax rate be as high as 31.8%. Basically, this arises because the reported incomes in the Socio-economic Surveys are invariably less than total household income from the National Accounts. This is true in most countries and not just in Thailand.

Another problem is that the shifting of all indirect taxes to household consumption will bias the result in the direction of regressivity. The point is that households are not the only source of final demand in the economy. In fact, in 1984, household consumption was only about half of total final demand; the other components being government consumption, investment, exports, and the consumption of tourists. Clearly, indirect taxes, even if they are fully passed on in higher prices will also affect the other sources of final demand. While it could be argued that because households own most of the assets in the economy, the impact on

13. See the discussions in Atkinson and Stiglitz (1980).

the other sources of final demand eventually fall on the households. While there is some merit to this view, the impact on distribution could be very different to the allocation of all indirect taxes to the household directly. For example, taxes lead to higher prices for investment goods. These are generally from the capital intensive sectors. Higher taxes may lead to lower investment, but the groups that are likely to suffer more from the decline in investment are those in the industrial sectors (see the analysis of the incidence of import duties in the next chapter). Thus, in this case the impact of indirect taxes on investment goods may lead to an improvement in income distribution.¹⁴

These problems with the above studies arose partly because of the partial equilibrium nature of the studies. With the partial approach, there is no built in discipline to make sure that all the data are consistent with what is known about the economy. In a general equilibrium approach, especially one based on a Social Accounting Matrix, it is necessary to start with a consistent data of the aggregate flows of incomes and commodities in the economy. This is particularly important in a study of tax incidence, because the full impact of taxes will crucially depend on the sources of incomes of households and their consumption patterns, and unless these are consistent with the overall structure of the economy to start with, many biases may be introduced even before any analysis is carried out.

14. For other shortcomings of the studies see Thanapornpun (1985b) and (1985c).

CHAPTER 5

EVALUATING THE AGGREGATE TAX INCIDENCE FOR THAILAND

5.1 Introduction

This chapter is concerned with assessing the relative burden imposed by the tax system on households. A general equilibrium approach based on a Social Accounting Matrix of the Thai economy was used for the analyses. This has the advantage in that the analyses start with a consistent accounting framework of the flows of commodities and incomes in the economy; with consistent accountings of the incomes that various institutions in the economy receive (such as the various households, the government, and the corporations); and consistent accountings of the expenditures of the various institutions. The Social Accounting Matrix also gives a consistent commodity balance for the economy, so that the production of each commodity is exactly matched by the uses of the commodities as intermediate inputs into production, or as final demand by the various institutions (including trade with the rest of the world).

The general equilibrium approach also has the advantage in that it can capture many of the key features that are likely to be important in the analyses of tax incidence; the different demand patterns of households; the different sources of incomes of households; the varying technology used in production; and the impact that taxes have, both in terms of directly influencing the prices of products, and also in terms of the

effects on factor prices and hence incomes. This approach was pioneered by Harberger (1962) in his analysis of the incidence of corporate taxation using a simple 2-sector general equilibrium model. Since then, there have been many analyses of tax incidence using more complicated models; see the review in McLure (1975), see also Devarajan, Fullerton and Musgrave (1980), and related references in Atkinson and Stiglitz (1980).

The analyses in this chapter were carried out by means of simulations with a general equilibrium model of the economy, which is similar in structure to a number of general equilibrium models that are used at the Thailand Development Research Institute for various purposes. The current model (and associated Social Accounting Matrix) was built especially for the current exercise, by adding more detailed disaggregations on the household side; disaggregations which are necessary for the analyses of tax incidence. The incidence of seven types of taxes or groups of taxes were analyzed.

These were:-

1. Income taxes.
2. Corporation taxes.
3. Business taxes.
4. Sales taxes.
5. Import duties.
6. All indirect taxes.
7. All taxes, direct and indirect.

For each tax or group of taxes, the simulation consisted of replacing the tax with a proportion income tax on households, which leads to the same total revenue for the government as before the change, and examining the resulting changes in the distribution of real incomes. The proportional income tax is by definition distributionally neutral, so the

changes occurring after replacement of a particular tax with the proportion income tax will indicate the effective incidence of the tax in question. Two different macroeconomic closures rules were used in the simulations, one where investment was held fixed, and one where the current account was held fixed. The latter was carried out to reflect the importance of external stability, so that if changes in taxes lead to much larger current account deficits, the government may have no choice but to initiate policies to bring the current account deficit into line, and these additional policies will generally also affect income distribution.

Government revenues are held constant before and after replacement of the various taxes to highlight the fact that taxes are necessary to raise revenue, and that governments have expenditure commitments that cannot easily be reduced. Thus, simply getting rid of some taxes without replacing the revenue loss would not be realistic.

Basically, the analyses showed that most of the taxes in Thailand are progressive in nature. Obviously income taxes are progressive. But so are corporation taxes, business taxes, and sales taxes. With import duties, the results indicate that they are probably fairly neutral, and depends on the closure used for the model.

For the whole tax system, it would not be too inaccurate to say that all indirect taxes taken together are fairly neutral (mainly because of the possible regressiveness of the import duties), while the direct taxes are progressive.

Obviously, the analyses in this chapter only considered the incidence of each tax group in aggregate. It would be

possible to have looked at more specific taxes, eg. the exercise tax on tobacco or fuel. However, at the more micro level, some of the taxes, particularly that on fuel, have their own complicated system, which would require a much more elaborate model than the current one to capture fully. For the case of taxes on oil products, Annex 1 briefly describes the system and the distributional issues.

The next section describes the salient features of the Social Accounting Matrix used for the study. Section 5.3 describes the analytical framework. Section 5.4 describes the simulations that were carried out, with the results described section 5.5. Section 5.6 concludes.

5.2 Description of the Social Accounting Matrix

This section describes some key features of the Social Accounting Matrix that was used as the database for model construction and simulations in this study. The explanation of a Social Accounting Matrix (SAM) will be given briefly, but the reader is referred to other sources for detailed expositions of the concept of a Social Accounting Matrix.¹

1. For detailed descriptions of the concept of a SAM, see for example King (1981), Pyatt and Round (1985). The description of a SAM for Thailand based on 1975 data can be found in Chewakrengkai and Lamsam (1982) and also in Amranand and Grais (1984), where the SAM is used as the data base for the SIAMII model, and where some experiments were carried out looking at the distributional impact of various policies.

The Social Accounting Matrix (SAM) is a consistent accounting of the income and expenditure flows in the economy. It is a square matrix where each entry refers to some transaction in the economy. An account in a SAM can be of various types, for example a production sector, a factor of production, the government, or a household. Each account appears both as a row in the SAM, and a column in the SAM. An entry in the SAM refers to a transaction in the economy. It represents a payment from the column account to the row account. For example, a payment from a sector of production to a factor of production would appear in the SAM at the cell corresponding to the production sector column and the factor of production row. Similarly, the flow of income from a factor of production to a household would appear as an entry from the factor of production column to the row corresponding to the household. Perhaps the simplest way to understand the structure of a SAM is to look at an example of a simple SAM as in table 5.1.

In this simple SAM, there are two production activities, labeled "ACTIVITY PRIVATE" and "ACTIVITY GOVERNMENT" (accounts 1 and 2). These produce two commodities "TOTAL SUPPLY PRIVATE" and "TOTAL SUPPLY GOV-SERV". The entries in the first two columns correspond to the input-output table, and the payments to factors of production. The commodities "TOTAL SUPPLY PRIVATE" and "TOTAL SUPPLY GOV-SERV" are used as inputs in both sectors of production, together with one imported commodity "IMPORT". Labor and Capital are used in the private sector, and only labor in the government sector. The activities produce commodities at producer prices. These are supplied to the consumers after paying taxes. Thus, in columns 3 and 4, the total supplies pay to the activity an amount equal to the

Table 5.1
Example Social Accounting Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL ROW
ACTIVITY PRIVATE	0	0	1958741	0	0	0	0	0	0	0	0	0	0	1958741
ACTIVITY GOV-SRV	0	0	0	0	0	0	0	0	0	0	0	0	0	94530
TOTAL SUPPLY PRIVATE	990348	9700	0	20	12040	0	0	615268	43288	188096	170468	0	0	2029229
TOTAL SUPPLY GOV-SERV	195	76	0	0	0	0	0	20608	73523	481	0	0	0	94882
IMPORT	203412	1476	0	0	0	0	0	31078	7341	0	41803	0	0	285109
PRIM-FAC LABOUR	293605	71359	0	0	0	0	0	0	0	0	0	0	0	367964
PRIM-FAC CAPITAL	471181	0	0	0	0	0	0	0	0	0	0	0	0	471181
CA-INST HOUSEHOLD	0	0	0	0	0	357602	417600	87723	22021	28072	0	0	0	913018
CA-INST GOVERN	0	11320	70489	331	31578	7361	0	22265	0	5312	0	18515	0	167770
CA-INST R-O-H	0	0	0	0	241492	0	0	21500	21598	0	0	4212	632	289434
CAP-INST TOT-INV	0	0	0	0	0	0	0	0	0	0	0	139347	72924	212271
CAP-INST SAV-POOL PRIVATE	0	0	0	0	0	0	36316	114576	0	38902	0	0	0	189794
CAP-INST SAV-POOL PUBLIC	0	0	0	0	0	0	17265	0	0	28571	0	27720	0	73556
TOTAL COLUMN	1958741	94530	2029229	94882	285109	364964	471181	913018	167770	289434	212271	189794	73556	

value of production at producer prices, and pay taxes to the government (the tax on government service might be regarded as some service charges). Factors of productions, labor and capital, give the earnings to the institutions according to the ownership patterns. Labor pays everything to the current account of households (CA-INST HOUSEHOLD), reflecting the full ownership of households of labor assets in the economy. Households do not get all the profits of capital, however. Most of it goes to households, but some also go into public sector saving (CAP-INST SAV-POOL PUBLIC), reflecting retained earnings of state-enterprises, and some are retained earnings of the private corporations (SAV-POOL PRIVATE). Households get income from the factors of production, and also from the government (CA-INST GOVERNMENT) in the form of interest payments, and from the rest of the world (CA-INST R-O-W), in the form of remittances and transfers. Households' sources of incomes are given along the household row (8). The entries in column 8 refer to households' uses of incomes. There are consumption expenditures (payments to TOTAL SUPPLY PRIVATE and GOV-SERV, and for IMPORT), payment of income taxes to the government, and there are payment outside of the country to the rest of the world. The rest of income is saved, and goes into the CAP-INST SAV-POOL PRIVATE account. The expenditures of the government are given along column 9. It spends on domestic commodities and imports, and pays interests and transfers to the households and the rest of the world. On the revenue side (row 9), the government gets income from taxes and profits on government services. The excesses of government expenditures over incomes are financed by borrowings from abroad (payment in row 9, column 10), and domestic borrowings (row 9, column 12). For the rest of the world, the receipts (along row 10) are from imports, transfers and interest payments. The payments from the rest of the world (column 10) are for exports and various

remittances and transfers. Finally, the current account deficit is given by the payment from the rest of the world to the saving accounts (CAP-INST PRIVATE and PUBLIC). These represent the net foreign borrowings of the private and public sectors, i.e. the current account deficit equals the total net borrowings from abroad. Investment (CAP-INST TOT-INV) buys domestic and imported commodities, and are financed by the saving accounts (public and private), which already included the needed borrowings to fill the saving-investment gap, as explained above. Finally, the saving pools are savings from the institutions' current accounts, and they are used to finance investment.

This simple SAM illustrates the consistency of a SAM. Each row total must equal the corresponding column total, i.e. the full amount of income or commodity flows must be accounted for. There is commodity balance, so that the production for each commodity is exactly equal to the total uses of the commodity, whether as intermediate inputs or as final demand. There is income balance, so that for each institution, total receipts must equal total expenditures (including saving). There is also macroeconomic balance, in that the current account deficit on the commodity side must exactly equal the net borrowings from abroad.

The construction of a SAM requires combining data from three main sources - the National Income and Expenditure Accounts, the Input-Output Tables, and the Socio-economic Surveys. The SAM that was used as the basis for the general equilibrium assessments of tax incidences was built by combining data from the 1982 Input-Output Table (the latest available at the present time), the 1984 National Accounts (New

Series)², and the latest Socio-economic Survey (1986). As with the building of any SAM, the data from various sources are usually inconsistent. For example, the household income data from the Socio-economic Surveys are usually much lower than that from the National Accounts (explainable by under-reporting of incomes in the survey). Similarly, the Input-Output table gives different value-added or import and export totals to the National Accounts. Given that the accounts in the SAM must balance, i.e. that the receipts and expenditures for each account must be equal, the data from various sources must be adjusted to lead to a consistent SAM. In the current analyses, the National Accounts totals were used as controls, and Input-Output data and household income and expenditure data were adjusted to give a consistent SAM, while preserving the structures from the Input-Output table and the Socio-economic Survey as much as possible.³

In the SAM used to analyze tax incidences, there were 27 sectors of productions, 23 imported commodity types, four types of labor, two types of capital, land used in agriculture, 19 household types, and four other institutions - government, state-enterprises, private corporation, and the rest of the world.⁴

2. Since part of the data base for the SAM was built in 1986, and the National Economic and Social Development Board has subsequently revised its preliminary new series of National Accounts, the SAM totals may depart slightly from the latest National Accounts figures for 1984.

3. There are standard techniques for adjusting the data from various sources to give a consistent SAM, commonly called "rusing".

4. In total there were 369 accounts and 2,282 non-zero entries in the SAM.

A full description of this SAM is beyond the scope of this paper, but the key parts of the SAM, particularly taxes and the households will be described below.

5.2.1 PRODUCTION AND FACTORS OF PRODUCTION

The 27 sectors of production are shown in table 5.2. In agriculture there are five sectors; paddy, other major crops, fruit and vegetable, fishing, and other agriculture.⁵ There are 15 industries, starting with slaughtering and ending with construction. The processing activities, such as rice milling and tobacco processing, are included as part of the industries. Finally, 7 service sectors are distinguished, including public administration. Each of the 27 sectors produces output using domestic and imported intermediate inputs and factors of productions, in a similar way to the simple SAM described above.

There are four types of labor corresponding to the four occupational household types that are distinguished. The four types are; labor in agriculture, labor in the private non-agricultural sectors, labor employed by the government, and labor employed by the state enterprises. Only two types of capital are distinguished; capital in agriculture and in non-agriculture. There is also land which is used in the agricultural sectors (except in fishing).

In general, the sectors of production vary in their degrees of labor intensities. Table 5.2 also gives the labor share in value added for each sector. In general, ignoring

5. Livestock was included as part of other agriculture.

Table 5.2
 Sectors in the SAM and
 Labor Shares in Value-Added

	LABOR SHARE IN VALUE ADDED (PERCENT)
1 PADDY	53.49
2 OTHER MAJOR CROPS	52.60
3 FRUIT AND VEGETABLES	57.91
4 OTHER AGRICULTURE	47.10
5 FISHING	20.19
6 SLAUGHTERING	22.38
7 CANNING AND FOOD PROCESSING	26.84
8 RICE MILLING	26.05
9 BEVERAGES	33.72
10 TOBACCO PROCESSING	30.71
11 OTHER FOODS	27.99
12 CLOTHING	29.81
13 WOOD-PAPER-RUBBER PRDS.	22.51
14 BASIC INDUSTRIES	21.16
15 APPLIANCES	25.91
16 OTHER HOUSEHOLD ITEMS	32.60
17 OTHER INDUSTRIES	24.20
18 FUEL	10.45
19 UTILITIES	25.13
20 CONSTRUCTION	29.53
21 HOTELS AND RESTAURANTS	35.40
22 TRANSPORT	34.69
23 REAL ESTATE	0.81
24 PUBLIC ADMINISTRATION	90.10
25 EDUCATION	82.55
26 HEALTH	49.15
27 OTHER SERVICES	26.30
ALL SECTORS	35.61

public administration, education and health, the agricultural sectors are the most labor intensive (except for fishing), followed by services, light industries, and finally, heavy industries. It should be noted that the labor payments include the imputed labor earnings of own-account operations.⁶ The non-labor part of own-account earnings are included in the returns to capital (and also land in the case of agriculture).

5.2.2 TAXES

Taxes are separated into 6 types; income taxes, corporation taxes, business taxes, sales taxes, import duties, and export tax. In the building of the SAM, factor incomes of the government were also included as part of the tax revenue,⁷ so that they are treated as part of the service charges of the public sector for services performed for the other sectors. These were included as part of the effective business tax that the various sectors of production have to pay.

The total revenues for each type of taxes are given in table 5.3. It should be noted that the figures may differ from those in chapter 2, because the estimates here are for the calendar year, and because some non-tax earnings have been included as part of the business taxes. The average business tax and sales tax rates for each of the 27 sectors are given in table 5.4.

6. The imputation of returns to labor for the own-account workers used wage data for employees in the Labour Force Surveys, and the assumption that the opportunity cost of labor time for own-account and non own-account activities are the same.

7. Similar to the studies by Krongkaew and Likitkijsomboon reviewed in the last chapter.

Table 5.3
Total Revenue of the Government
in the Base SAM

	TAX REVENUES (MILLIONS BAHT)
BUSINESS TAX	58,687
IMPORT TAX	29,692
EXPORT TAX	1,862
CORPORATION TAX	19,083
INCOME TAX	21,976
EXCISE TAX	28,101
TOTAL TAX	159,401

Table 5.4
Business Tax and Sales Tax Rates
in base SAM

SECTORS	BUSINESS TAX	SALES TAX
PADDY	0.60%	0.00%
OTH.MAJ CROPS	0.50%	0.00%
VGFR	1.20%	0.00%
OTH.AGR	1.20%	0.00%
FISHING	0.60%	0.00%
SLAUGH	0.60%	0.00%
C-P FOOD	2.60%	0.00%
RICE MILLING	2.90%	0.00%
BEVERAGE	8.40%	29.10%
TOBACCO PROCESS	0.00%	91.60%
OTHER FOODS	2.00%	0.00%
CLOTHING	4.30%	0.00%
W-P-T	4.60%	0.00%
BASIC INDUST	8.90%	0.80%
APPLIAN	3.80%	0.00%
OTHER H-H ITEM	3.40%	0.00%
OTHER INDUST	5.70%	0.00%
FUEL	0.00%	16.60%
UTILITY	0.00%	0.00%
CONSTR	1.40%	0.00%
HOT-RES	7.40%	0.00%
TRANSP	0.70%	0.00%
REAL ESTATE	0.70%	0.00%
PUBLIC ADMIN	0.00%	0.00%
EDUCAT	0.00%	0.00%
HEALTH	0.10%	0.00%
OTHER SERVICE	4.50%	0.00%
ALL SECTORS	2.96%	1.38%

5.2.3 THE HOUSEHOLDS

In assessing the impact of taxes on income distribution, it is essential to have different household types in the SAM. While the simple SAM that was used for illustration above had only one household, in the SAM used to analyze tax incidents households in the economy were disaggregated along two dimensions - the main occupation of the household (based on the occupation of the head of the household), and the quintile group of per capita income of the household. There are four different occupations - (i) Government Employee, (ii) State Enterprise Employee, (iii) Agricultural Household, and (iv) Private Sector Non-Agricultural Household. For each occupation, households were split into 5 groups based on the income quintile in which they fall. There should therefore be twenty different household types. However, the household sample in the 1986 Socio-economic Survey had very few State Enterprise households in the fourth quintile, so these were deleted, and there are altogether 19 different households.

The basic data on these 19 households are given in table 5.5. In total, it was estimated that there were 12.1 millions households in the country with a mean size of 4.33 persons, representing about 52.5 millions individuals. Agricultural households were the most numerous with a share of about 59.5% of the total number of households. The private non-agricultural households made up 31.7% of households, and the government and state-enterprise households represented 7.6% and 1.1% respectively.

There are three dimensions in which households differ which are likely to be particularly important in the way taxes affect the distribution of income. The three are the sources

Table 5.5
Basic data on the 19 Households in the SAM

TYPE	QUINTILE	NUMBERS	MEAN HH-SIZE	SHARE OF HH	SHARE OF POP
AGRICULTURE	1	586,811	3.45	4.84%	3.85%
	2	1,383,969	4.10	11.41%	10.79%
	3	1,777,853	4.46	14.66%	15.07%
	4	1,757,111	5.11	14.49%	17.08%
	5	1,709,702	5.57	14.10%	18.10%
NON-AGRICULTURE	1	1,730,018	3.30	14.27%	10.87%
	2	1,024,711	3.92	8.45%	7.65%
	3	578,207	4.19	4.77%	4.61%
	4	297,951	4.56	2.46%	2.59%
	5	218,315	5.10	1.80%	2.12%
GOVERNMENT	1	707,276	3.32	5.83%	4.47%
	2	157,151	4.41	1.30%	1.32%
	3	43,836	5.06	0.36%	0.42%
	4	14,590	5.23	0.12%	0.15%
	5	613	5.40	0.00%	0.00%
STATE ENTERPRISE	1	115,126	3.30	0.95%	0.72%
	2	20,712	4.21	0.17%	0.17%
	3	2,283	4.77	0.02%	0.02%
	4	496	6.00	0.00%	0.00%
	5				
TOTAL		12,126,730	4.33	100.00%	100.00%

Note: Quintile 1 is the richest quintile.

of household income, the consumption pattern, and the different rates of direct taxes faced by the households. These are examined in turn.

a) Sources of Incomes

The different sources of household income will be one factor influencing the way taxes affect the distribution of incomes. Changes in taxes will generally affect relative prices and favor one sector relative to another. This may for example lead to non-agricultural sectors performing better than agricultural sectors. Because households get their incomes in different proportion from different sources, the relative positions of the households will generally change. In constructing the SAM, the total income of households (money, in-kind and others receipts), and the structure of incomes from various sources from the Socio-economic Survey was used as the base. The National Accounts used for building the SAM had totals for various kinds of income, eg. wages in agriculture and non-agriculture, unincorporated enterprise earnings in agriculture and non-agriculture etc.. These were used as control totals, and household incomes for the different types were adjusted to lead to the controlled totals while preserving the structures of incomes from the Socio-economic Survey.

Each household obtains income from the factors of productions, i.e. households have claims on the production assets; whether labor, capital or land. One can distinguish 8 different sources of incomes - (i) Wages in agriculture (including imputed wages for own-account and unpaid family workers), (ii) Agricultural profits (representing returns to all non-labor assets used in the agricultural sector), (iii) Wages from government employment, (iv) Wages from state-enterprise employment, (v) Wages from private non-agricultural

employment, (vi) Profits of unincorporated non-farm enterprises, (vii) Property income (including interests and dividends), and (viii) Net transfer income. Usually a household will have some income from most of these sources. This is because a household was classified according to the main occupation of the head of household, and while the head may be engaged for example in agriculture, some household members may work for the government, or as a private employee in the non-agricultural sector.

The data on the sources of income for different household types are given in table 5.6. It can be seen that the richest household group was the state-enterprise households, with a mean income of 12,471.8 baht per month per household. The next richest group consisted of the government households, earning an average 9,953.1 baht per month. This was followed by the private non-farm households (9,077.9 baht per month), and the poorest group as to be expected consists of the agricultural households, with a mean income of only 2,665.7 baht per month. As was discussed above, the agricultural households made up about 59.5% of all households. However, because the agricultural households were much poorer than the other groups, they only accounted for 29.5% of the total household incomes.

The agricultural households only earned about 54% of their incomes from agricultural activities, and a substantial portion of incomes came from non-agricultural activities, particularly in the non-public sector. Profits from non-agricultural enterprises made up about 27% of agricultural households' incomes, confirming the importance of non-agricultural activities in supplementing the incomes of the

Table 5.6
Sources of Incomes by Aggregated Occupations

TYPE	BAHT PER HOUSEHOLD PER MONTH								
	TOTAL INCOME	WAGE AGRIC	AGRIC PROFIT	WAGE GOV	WAGE ST. ENT	WAGE NON-AG	NON-AGRIC PROFIT	TRANSFER INCOME	PROPERTY INCOME
AGRICULTURE	2,665.7	726.8	716.4	47.3	4.0	193.9	714.5	110.0	152.6
NON-AGRICULTURE	9,077.9	95.9	103.8	168.6	46.2	2,920.8	4,846.1	321.7	574.8
GOVERNMENT	9,953.1	82.4	101.0	5,170.1	92.4	749.9	2,085.3	352.0	1,320.0
STATE ENTERPRISE	12,471.8	71.0	85.7	391.7	7,271.1	805.3	2,114.2	625.8	1,106.9
TOTAL	5,368.1	478.0	467.9	479.9	107.2	1,108.8	2,146.3	201.5	386.4

ROW SHARES

TYPE	ROW SHARES								
	TOTAL INCOME	NEW WAGE AGRIC	NEW FARM PROFIT	WAGE GOV	WAGE ST. ENT	NEW WAGE NON-AG	NEW W. FARM PROFIT	TRANS INCOME	PROP INCOME
AGRICULTURE	100.00%	27.27%	26.88%	1.78%	0.15%	7.27%	26.80%	4.13%	5.73%
NON-AGRICULTURE	100.00%	1.06%	1.14%	1.86%	0.51%	32.17%	53.38%	3.54%	6.33%
GOVERNMENT	100.00%	0.83%	1.01%	51.94%	0.93%	7.53%	20.95%	3.54%	13.26%
STATE ENTERPRISE	100.00%	0.57%	0.69%	3.14%	58.30%	6.46%	16.95%	5.02%	8.88%
TOTAL	100.00%	8.76%	8.72%	8.94%	2.00%	20.66%	39.98%	3.75%	7.20%

agricultural households.⁸ About 9% of agricultural households' incomes were from wages in non-agriculture; mostly as employees in the private sector, and a little from the public sector. Property incomes and net transfers made up 5.7% and 4.1% of the incomes of the agricultural households respectively.

For public sector households, government and state-enterprises, private sector non-agricultural activities were also important supplements to their income. Government households earned 52% of their incomes from government wages, and state-enterprise households earned 58% of their incomes from state-enterprises' wages. Private sector non-agricultural incomes made up 28% of the government households' incomes and 23% of the state-enterprise households' incomes. Surprisingly, only a small proportion of incomes of government households came from state-enterprises' wages, and vice versa; suggesting that households with mixtures of workers in both the government and state-enterprises were not numerous. Net transfers ranged between 4-5% for public sector households. Property incomes were however more important for the public sector households than for the other groups, making up 13.3% of government households' incomes and 8.9% of state-enterprise households' incomes.

The private non-agricultural households earned by far the majority of their incomes from within their own sector, with private non-agricultural wages and profits from non-agricultural unincorporated enterprises making up 85.5% of their income. Net transfers and property incomes together made

8. See eg. Akrasane (1983). Part of the non-agricultural income arises from seasonal migration during the dry season months, see Sussangkarn (1987).

Table 5.7
Sources of Incomes and Direct Taxes by Households

TYPE	QUINTILE	TOTAL INCOME	WAGE AGRIC	AGRIC PROFIT	WAGE GOV	WAGE ST. ENT	WAGE NON-AG	NON-AGRIC PROFIT	TRANSFER INCOME	PROPERTY INCOME
AGRICULTURE	1	100.00X	21.92X	25.73X	3.64X	0.49X	7.63X	26.61X	6.16X	7.82X
	2	100.00X	25.35X	25.01X	2.08X	0.05X	10.25X	28.41X	3.91X	4.93X
	3	100.00X	29.92X	28.05X	0.72X	0.03X	6.81X	26.15X	3.55X	4.79X
	4	100.00X	33.34X	30.04X	0.34X	0.00X	3.77X	24.92X	2.70X	4.90X
	5	100.00X	33.01X	28.11X	0.11X	0.00X	3.74X	27.06X	2.43X	5.55X
NON-AGRIC	1	100.00X	0.44X	0.56X	2.21X	0.64X	31.16X	54.39X	3.68X	6.92X
	2	100.00X	1.98X	1.97X	0.96X	0.17X	36.51X	50.81X	3.37X	4.25X
	3	100.00X	4.04X	4.08X	0.41X	0.00X	33.56X	51.15X	2.74X	4.04X
	4	100.00X	6.10X	6.12X	0.37X	0.00X	31.40X	46.06X	2.54X	7.41X
	5	100.00X	8.30X	7.85X	0.02X	0.00X	32.56X	42.63X	2.47X	6.18X
GOVERNMENT	1	100.00X	0.48X	0.59X	51.95X	1.03X	7.54X	20.99X	3.64X	13.77X
	2	100.00X	3.04X	3.59X	53.46X	0.03X	8.01X	20.64X	2.50X	8.72X
	3	100.00X	5.82X	7.89X	47.77X	0.00X	5.52X	20.03X	2.40X	10.58X
	4	100.00X	14.87X	18.32X	27.80X	0.00X	3.65X	21.85X	10.51X	3.00X
	5	100.00X	13.58X	14.05X	38.38X	0.00X	5.83X	19.90X	2.54X	5.73X
ST. ENTERPRISE	1	100.00X	0.56X	0.68X	3.22X	56.97X	6.72X	17.21X	5.38X	9.25X
	2	100.00X	0.64X	0.83X	2.27X	73.76X	3.18X	14.31X	0.51X	4.50X
	3	100.00X	0.00X	0.00X	0.00X	90.85X	4.61X	4.25X	0.27X	0.02X
	4	100.00X	14.81X	0.00X	0.00X	66.57X	0.00X	18.62X	0.00X	0.00X
	5	100.00X	14.81X	0.00X	0.00X	66.57X	0.00X	18.62X	0.00X	0.00X
TOTAL		100.00X	8.76X	8.72X	8.94X	2.00X	20.66X	39.98X	3.75X	7.20X

up about 10% of the incomes of this group, and the remaining 5% of incomes were earned from the agricultural and the public sector.

Table 5.7 shows the detailed household income sources for each occupational group and income quintile. There are a few interesting features in the table worth mentioning. First, while it was seen that the richest household by occupation was the state-enterprise households, the break-down by quintile shows that the richest household was the private non-agricultural household in the top quintile. This group had a mean income of 15,272.7 baht per month compared to 13,890.9 and 11,642.4 baht per month for the top state-enterprise and government households respectively. Second, all the private non-agricultural households earned more of their incomes from profits rather than wages. This reflects the importance of the unincorporated sector in the economy. For an own-account enterprise much of the incomes are returns to capital and other assets rather than just the returns to the labor of the own-account and unpaid family workers. In fact, non-agricultural unincorporated enterprise profits made up almost 40% of the total household incomes for the whole country. For farm households the situation was similar. The farm household in the top quintile earned more income from agricultural profits than from agricultural wages (including the imputed value of time of own-account and unpaid family workers). For agricultural households in the other quintiles, the share of income from agricultural wages were higher, but the proportions of incomes from agricultural profits were not much less.

The importance of profits from unincorporated enterprises (agricultural and non-agricultural) to the incomes of non-public sector households means that changes in the aggregate

functional distribution of income (i.e. returns to labor versus capital or land) may not provide a good guide to changes in the household distribution of income. If one adds up the shares of household incomes from agricultural profits, non-agricultural profits and property income, and take these as being earnings from claims on capital and land, then it turns out that all the agricultural households earned approximately the same shares of incomes from claims on non-labor assets (between 58-60%). For private non-agricultural households, the top quintile earned the most from non-labor assets, and the bottom quintile the least. However, the differences were not large, ranging from 56.7% for the bottom quintile to 61.9% for the richest quintile. The differences between private and public sector households in the proportions of incomes from non-labor assets were larger. Households headed by government employees earned between 32.9% and 43.2% from non-labor assets. However, the bottom two quintiles had the largest shares of such incomes. State-enterprise households generally earned a much lower proportion of incomes from non-labor assets. The ratio was about 18-19% for the top and bottom quintile, but was much less for the second richest quintile.

Finally, the patterns of net transfer incomes was quite interesting. For the economy as a whole, the total net transfers between households in the country will be zero. However, there are large transfers to households from abroad, mainly in the form of remittances. In total, for 1984, this net transfer from abroad was estimated to be about 29,326.5 million baht. The data show that all the household groups received a positive net transfer. Ignoring the case of the government household in quintile 4, where the very large share of income from net transfers probably arised from the relative small sample of this group in the Socio-economic Survey, it can

be seen that within each occupational group, the richer the household, the higher was the share of incomes from net transfers. Thus, within each occupational group the net transfers from outside the household did not appear to alleviate the inequality within the group. However, agricultural households had a higher ratio of net transfers in total incomes than other groups of households, so that the transfers served to reduce the inequality between the agricultural households and the rest.

b) Consumption Patterns

Taxes on different commodities or sectors of productions will directly affect the real incomes of households through their impact on the prices of goods in the households' consumption bundles. In the SAM, there are all together 24 different types of commodities consumed by households. In Table 5.8, these were aggregated into 9 broad groups, with the mean consumption per month and the shares in total consumption given for each consumption group and each household type. An examination of the consumption patterns in this table can already give some indication of the likely relative impact of some indirect taxes on the various households (at least from just the side of the expected impact on product prices).

As to be expected from Engel's Law, the share of food consumption generally decreases as the level of consumption increases.⁹ Looking at the food category, it can be seen that the shares in total consumption ranged from about 20% for the top quintile to about 45% for the bottom quintile. One complication is that this food category only referred to food prepared in the home. In addition, food is also consumed in

9. See the analysis by Pattamakitsakul (1988).

Table 5.8
Consumption Patterns by Household

TYPE	QUINTILE	TOTAL	OTHER								
		CONSUMP	FOOD	BEVEG	HOT&REST	TOBACCO	CLOTHING	HH-ITEMS	UTILS.	PUBL&TRANS	OTHER
AGRICULTURE	1	100.00X	24.39X	5.33X	4.05X	1.69X	11.54X	12.26X	0.67X	6.09X	34.01X
	2	100.00X	32.83X	4.59X	3.60X	1.69X	12.50X	11.07X	0.51X	6.62X	26.51X
	3	100.00X	36.77X	4.79X	2.67X	1.60X	13.08X	11.18X	0.46X	6.37X	23.09X
	4	100.00X	42.94X	3.48X	1.92X	1.74X	11.87X	11.10X	0.42X	5.69X	20.84X
	5	100.00X	44.45X	3.16X	1.65X	1.65X	13.39X	10.83X	0.41X	5.12X	19.33X
NON-AGRIC	1	100.00X	19.60X	6.68X	11.07X	2.06X	8.15X	9.37X	1.38X	11.27X	30.43X
	2	100.00X	30.80X	6.86X	8.69X	2.69X	8.38X	10.78X	1.17X	8.75X	21.89X
	3	100.00X	35.46X	4.37X	5.33X	2.52X	8.49X	13.56X	0.76X	7.24X	22.26X
	4	100.00X	41.44X	3.27X	4.50X	2.18X	10.28X	11.80X	0.67X	6.97X	18.89X
	5	100.00X	45.22X	3.58X	3.78X	1.90X	10.06X	12.84X	0.79X	6.00X	15.82X
GOVERNMENT	1	100.00X	19.90X	6.26X	9.22X	1.84X	9.20X	12.41X	1.13X	10.14X	29.89X
	2	100.00X	32.03X	6.14X	6.12X	2.71X	8.92X	11.40X	0.87X	9.02X	22.81X
	3	100.00X	39.83X	5.57X	5.89X	2.46X	10.57X	12.50X	0.60X	6.72X	15.86X
	4	100.00X	37.87X	3.27X	6.14X	1.59X	9.24X	11.22X	0.47X	9.39X	20.82X
	5	100.00X	35.54X	2.47X	3.68X	1.52X	5.68X	8.29X	0.70X	23.13X	18.98X
ST. ENTERPRISE	1	100.00X	19.62X	5.62X	10.10X	2.54X	9.10X	9.20X	1.13X	14.45X	28.25X
	2	100.00X	28.11X	4.26X	6.62X	2.65X	11.55X	7.60X	0.51X	12.70X	25.99X
	3	100.00X	55.94X	5.55X	6.88X	2.91X	0.04X	7.64X	0.58X	1.92X	18.53X
	4	100.00X	68.64X	4.14X	0.13X	2.02X	0.24X	9.04X	0.13X	0.40X	15.25X
	5	100.00X	68.64X	4.14X	0.13X	2.02X	0.24X	9.04X	0.13X	0.40X	15.25X
TOTAL		100.00X	27.10X	5.70X	7.42X	1.99X	9.87X	10.75X	0.98X	8.95X	27.24X

restaurants (whether of the more formal type or the side-of-the-street type)¹⁰, and so the total consumption of food will include some of the consumption in the Hotel and Restaurant category. The consumption in this latter category was limited mostly to the non-agricultural sector, and the richer households tended to show a higher consumption share for Hotel and Restaurant. For Beverages, the situation was similar to Hotel and Restaurant in that the shares of consumption of the richer households was greater. For Food and Beverages as a group (including Hotel and Restaurant), the consumption pattern suggested that the burden of business and sales taxes were borne mainly by the richer households. This was because most of the taxes in this group falls on Hotel and Restaurant (7.4% effective business tax rate) and Beverages (8.4% effective business tax rate and 29.1% sales tax rate), and the richer households consumed a higher proportion of these two categories in total consumption.

For Tobacco, which had a very high effective sales tax rate of over 90%, the shares in total consumption did not vary monotonically with income levels. Generally, non-agricultural households had a higher ratio of Tobacco consumption in total consumption than agricultural households. However, within the non-agricultural households group, it appeared that the highest consumption shares occurred for the middle quintile groups of households.

Another consumption group with a significant rate of sales tax was Fuel and Transportation, with an effective sales tax rate on Fuel of about 17%. The richer households,

10. Basically, all food consumed outside the home were aggregated under the Hotel and Restaurant group.

particularly those in the non-agricultural sector, clearly had a higher consumption share in this category. This pattern was also true for the consumption of Utilities. For Clothing, poorer households generally had a higher share in total consumption, although the relationship to incomes was far from monotonic. The Other Household Items group did not show any clear trends, although this group included Appliances, in which more disaggregated data showed the richer households to have a higher share in total consumption. The Other group exhibited a general declining share in consumption with incomes within each occupational group, but the shares for agricultural households tended to be higher than that for non-agricultural households.

c) Income Taxes

The most direct impact of taxes on household incomes is through income taxes. In Thailand, income taxes collected by the government are a very small proportion of total household incomes. In the calendar year 1984, it was estimated that total income taxes amounted to about 21,976 millions baht. This compared to the total household incomes before tax of about 781,163 millions baht, so that the effective mean income tax rate was only about 2.8%. Of course, this low mean rate reflected the low mean income levels for the country as a whole, with mean household incomes averaging just over 5,350 baht per month per household, and also reflected the existence of a large group of households who did not need to pay income taxes. For the disaggregation used in the Social Accounting Matrix, with households divided up only by quintiles, the full intricacies of the impact of income taxes through the various income brackets and deductions cannot be captured. This is because even for the top quintile of households the mean income was still rather low, ranging from about 8,800 baht per month for the agricultural households to about 15,300 baht per month

for the private non-agricultural households, and these income levels only reached the first few brackets in the statutory income tax schedule.¹¹ Nevertheless, the effective income tax rates for each of the 19 households used in the SAM did reveal the expected progressive nature of income taxes, with some interesting caveat. This can be seen in table 5.7.

The top quintile paid most of the income taxes, amounting to 81.6% of the total income taxes collected. The household group with the highest effective mean income tax rate was the top quintile of the state-enterprise households, with a rate of 5.59%. This group was followed by the top quintiles in government employee households (4.85%), private non-agricultural households (3.41%) and the agricultural households (2.0%). It is interesting to note that while the top quintile of the private non-agricultural households had the highest mean income, this group paid a lower proportion in income taxes than the top quintile in the public sector households. This can be explained mostly by the different sources of incomes of these households. The public sector households earned most of their income from public sector wages, the type of incomes in which it is very difficult to avoid paying income taxes. The top private non-agricultural household earned more than half of its incomes from net non-agricultural profit, mostly through own-operated enterprises, and this type of income is very difficult to tax effectively. Basically, income taxes from wages are collected mostly from employees in the so called "formal" sector, including workers in the larger firms and the public sector. Much of the tax is deducted at source so there is little room for tax avoidance. The part of the private non-

11. For detailed analyses of income tax rates, see Sahasakul (1987).

agricultural households who relies on wage incomes in the formal sector are similar to the government employees, in that the avoidance of tax on wage incomes is difficult. However, because for this group, on average, more income was derived from unincorporated enterprise profits, they ended up paying a lower proportion of income as income taxes.

Earnings from property incomes, particularly interests and dividends, are also taxed effectively; again through deductions at source, although there are many types of property income exempt from income taxes, eg. interests from saving deposits. This explains why the data showed that the third quintile of government households paid a higher proportion of income taxes than the second quintile in the same group, and similarly why the fourth and fifth quintiles in the private non-agricultural households paid a higher ratio of income taxes than the second and third quintiles in the same group respectively.

The agricultural households generally paid a lower proportion of incomes as income taxes than the non-agricultural households. This is both a factor of the lower incomes of this group, and also because most of the income sources of the agricultural households fell outside the formal tax system.

5.3 The Analytical Framework and Methodology in Assessing Tax Incidence

The general equilibrium model that was used for the tax incidence exercise was a SAM-based model similar in the main

features to models such as the SIAMII.¹² Each account in the SAM had an associated price, quantity, and value, or for some accounts (eg. the account corresponding to government revenue) there were no prices but only values. The model specified which price, quantity or value were endogenous or exogenous. To complete the model, the equations determining each non-empty cell of the SAM had to be specified. The economic specifications were fairly standard, for example the payment from a production sector to factors of production were treated as arising from the factor demand equations depending on the production function, and assuming profit maximizing behaviors and competitive industries. In the followings some aspects of the model will be described.¹³

5.3.1 COMMODITIES

Domestic commodities and imported commodities were combined according to a Constant Elasticity of Substitution (CES) function into a composite commodity to reflect the fact that imports and domestic commodities are not perfect substitutes, especially at the levels of aggregation that was used here. These composites were then used in production, consumption and investment. Not all commodities were composite commodities, however, as not all commodities were imported, eg. paddy. So that in the model there were 23 composite commodities corresponding to the 23 imported goods, and four other purely domestic commodities.

12. See the description of the SIAMII model in Amranand and Grais (1984).

13. For some standard specifications, and their derivations, see the paper by Grais (1982).

Because of the combinations of imports with domestic commodities into composites, the shares of import in the composite will depend on the relative prices of the imported and the domestic commodities. If domestic price rises, then a given unit of composite will tend to contain more imports. The elasticity of substitution will govern the degree to which the import shares respond to a change in the price. If the elasticity of substitution is very high then any slight change in relative prices will bring about large changes in relative shares. The case where the elasticity of substitution is infinite corresponds to one where domestic and imported commodities are perfect substitutes, so that domestic prices are determined by world prices (with a wedge depending on any import duties in the system). In the model, it was assumed that due to the presence of much product differentiation (particularly with a disaggregation into only 27 sectors) the elasticities of substitution between imports and domestic productions were fairly low. For investment, government consumption, and intermediate demand the elasticity of substitutions were assumed to be 0.3, while for household consumptions they were assumed to be 0.8.¹⁴

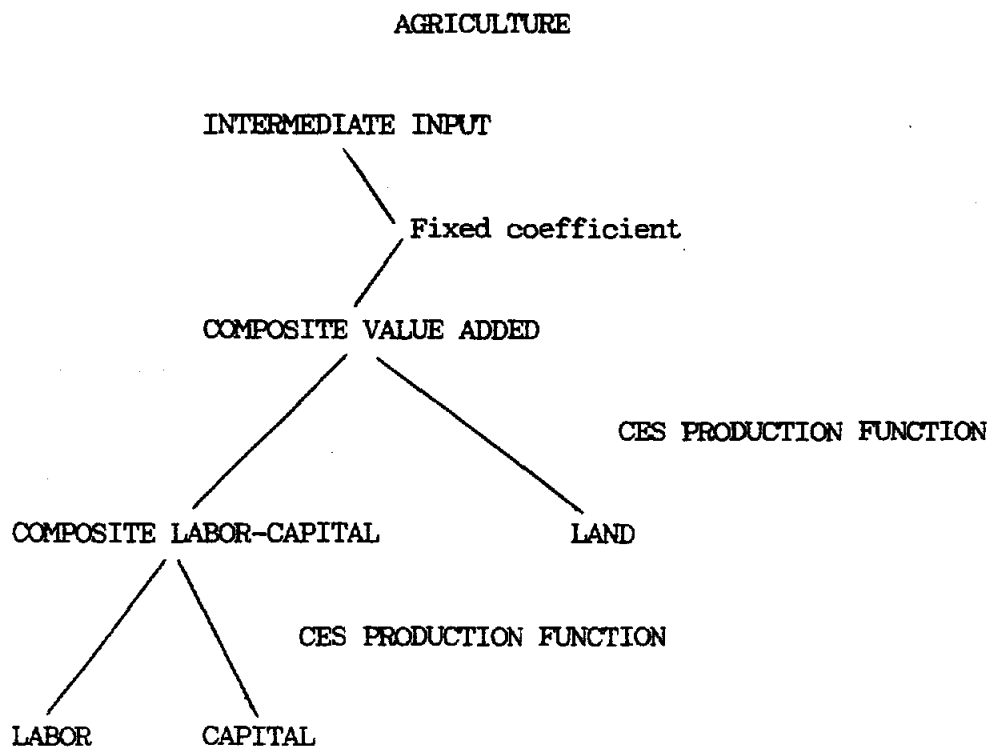
5.3.2 PRODUCTION

Intermediate inputs in each sector of production was treated as in a Leontief type model, so that the input-output table had fixed coefficients in quantities, i.e. the quantity

14. The model distinguished between two types of composites depending on their use, This is to capture the fact that the import share in one unit of household consumption is very different to that in say one unit of investment. To keep the model down to a manageable size, there was only one composite type in common between intermediate demand, government consumption and investment.

of commodity j needed to produce one unit of commodity i was assumed fixed. The intermediate inputs were also combined with value added in fixed proportions. However, there were substitutabilities between the factors of production depending on the relative prices of the factors. The substitution possibilities were assumed to be governed by constant elasticities of substitution (CES) production functions. If capital became more expensive, then some labor could be substituted for capital according to the value of the elasticity of substitution. Given the CES production function, the input demand functions could be derived in the standard text book fashion, and these were used to specify the cells of the SAM corresponding to the payment from the sector of production to the factors of production. In agriculture, land was also used as an input, and a two stage CES production function was used, where first labor and capital was combined into a composite input, which was then combined with land. Each stage of combination had its own elasticity of substitution. The production structure in agriculture can be seen in the following diagram.

Some non-agricultural sectors included both public and private sectors, eg. transportation included state-enterprises and private transportation firms, and education and health included both public and private provisions. For these cases, it was assumed the public and private labor both entered into the production function, together with capital.



The elasticity of substitution used in the simulations were not too far from one (the Cobb-Douglas case), although for some experiments, alternative values were tried to see the sensitivity of the results. In agriculture, the elasticity of substitution between labor and capital was 1.1, and between land and the composite labor-capital it was 0.8. For other sectors, the values were 1.2 for the light industries and the service sector, and 0.8 for the other sectors.

5.3.3 FACTORS OF PRODUCTION

The seven types of factor supplies, agricultural labor, private non-agricultural labor, labor in government and in state-enterprise, capital in agriculture and non-agriculture, and land, were assumed to be fixed in quantity. It should be

noticed that over the long run this will obviously not be true, because there will be capital accumulation, and the amounts of the various types of labor will change as labor moves from one occupation to another. However, with such movements, the occupations of the households will change, so that a household that was an agricultural household in the base situation may become a non-agricultural household. This leads to the number of households of each type being endogenous, and is beyond the scope of the current study.

5.3.4 FINAL DEMAND

There were 5 types of final demand. Consumption by households, consumption by the government, consumption by tourists, export and finally investment. Each export was assumed to have a constant elasticity of demand depending on the relative price between the domestic price and the world price (expressed in foreign currency through a fixed exchange rate). If the elasticity was infinite, then one had the small country case where the world price determined the domestic price. However, because of product differentiations within each sector, this is unlikely to be the case. For agricultural exports, the elasticity was assumed to be 3.5, except for the "Other Major Crops" sector, where it was assumed to be 5.0, as the products in this group appeared to be more homogeneous. For non-agricultural exports, the elasticity of demand was fixed at 1.5, except for some service exports, where the elasticity was taken to be 0.3 to reflect the more "non-tradeable" nature of the service sector.

The value of government consumption was taken as exogenous, and so was investment for one of the closures (see below). For household consumption, it was assumed that the

Table 5.9
Consumption Patterns From Linear Expenditure System
(Millions Baht per Year)

	QUINTILE 1				QUINTILE 2			
	FIXED.CON	MARG.CON	MARG.BUD SHARE	CONSUMP ELASTI	FIXED.CON	MARG.CON	MARG.BUD SHARE	CONSUMP ELASTI
RICE	10848.6	1214.4	0.54%	0.17	8704.8	734.3	1.15%	0.16
FRUITS AND VGT.	8534.5	5731.2	2.56%	0.70	4528.2	1973.2	3.10%	0.62
OTHER AGRICULTURE	2136.3	5042.4	2.25%	1.22	1347.4	1629.9	2.56%	1.12
FISH	5274.3	5894.7	2.63%	0.92	4142.3	3049.9	4.80%	0.87
MEAT	9249.6	5326.5	2.38%	0.63	6160.9	1446.9	2.28%	0.39
PROCESSED FOODS	6505.1	342.4	0.15%	0.09	2056.2	108.3	0.17%	0.10
OTHER FOODS	9140	3718.9	1.66%	0.50	4535	1009.7	1.59%	0.37
BEVERAGES	3980.2	28826.5	9.29%	1.46	745	6700.5	10.54%	1.84
TOBACCO	4898.6	2825.8	1.26%	0.63	1484.5	1407.5	2.21%	1.00
HOTELS-RESTAURANTS	21774	16076.3	7.17%	0.74	2338.8	5615.6	8.83%	1.45
CLOTHING	10501.6	23935.7	10.67%	1.21	4699.8	8871.8	13.95%	1.34
WOOD-PAPER-RUBBER PRDS.	3059.9	6397.9	2.85%	1.17	1535.8	1400.3	2.20%	0.98
BASIC INDUSTRIES	11377	2880.7	1.28%	0.35	6377.9	584	0.92%	0.17
APPLIANCES	2604.9	3443.9	1.54%	0.99	998	804.3	1.26%	0.91
OTHER HOUSEHOLD ITEMS	1997.3	105.3	0.85%	0.09	512.7	26.9	0.04%	0.10
OTHER INDUSTRIES	6540.5	1978.4	0.88%	0.40	931.4	1062.4	1.67%	1.09
FUEL	3284.3	1058.8	0.47%	0.42	592.6	324.7	0.51%	0.73
UTILITIES	4523.6	238	0.11%	0.09	831.9	248.2	0.39%	0.47
CONSTRUCTION	-3102.9	5698.2	2.54%	3.81	577.1	50.2	0.08%	0.16
REAL ESTATE	19487.1	1025.6	0.46%	0.09	5096.8	593.9	0.93%	0.21
TRANSPORT	8158.4	28274.6	12.61%	1.35	2176.7	7072.1	11.12%	1.57
EDUCATION	3459.4	182	0.08%	0.09	1013.2	53.4	0.08%	0.10
HEALTH	4372.2	11842.6	5.28%	1.27	1994.3	3354.1	5.27%	1.28
OTHER SERVICES	9339.4	67162.1	29.95%	1.52	3278.4	15464.8	24.32%	1.69

Table 5.9 (Continued)
 Consumption Patterns From Linear Expenditure System
 (Millions Baht per Year)

	QUINTILE 3				QUINTILE 4			
	FIXED.CON	MARG.CON	MARG.BUD SHARE	CONSUMP ELASTI	FIXED.CON	MARG.CON	MARG.BUD SHARE	CONSUMP ELASTI
RICE	7388.5	388.7	0.94%	0.09	6008.5	316.2	1.55%	0.12
FRUITS AND VGT.	2612.8	1603.3	3.87%	0.72	2569.5	362.1	1.77%	0.29
OTHER AGRICULTURE	930.6	925.9	2.23%	0.94	916.3	272.8	1.33%	0.54
FISH	2378.8	2989.6	7.22%	1.05	2342.6	2078.4	10.17%	1.11
MEAT	4466.9	511.9	1.24%	0.19	3020.3	159	0.78%	0.12
PROCESSED FOODS	1019	53.6	0.13%	0.09	610.9	32.1	0.16%	0.12
OTHER FOODS	2747.5	428.4	1.03%	0.25	1876.1	98.8	0.48%	0.12
BEVERAGES	-402.3	4859.8	9.80%	2.09	-396.2	2062.7	10.09%	2.93
TOBACCO	881.7	584.3	1.41%	0.75	784.5	91.1	0.45%	0.25
HOTELS-RESTAURANTS	-1110.1	3834.4	9.25%	2.65	-1093.3	2236.7	10.94%	4.64
CLOTHING	2057.1	7081.3	17.09%	1.46	2027.9	3589.3	17.56%	1.51
WOOD-PAPER-RUBBER PRDS.	1132	600.2	1.45%	0.65	1114.8	149.5	0.73%	0.28
BASIC INDUSTRIES	4780.8	502.7	1.21%	0.18	3114.3	163.9	0.80%	0.12
APPLIANCES	707.2	37.2	0.09%	0.09	250.5	13.2	0.06%	0.12
OTHER HOUSEHOLD ITEMS	291	15.3	0.04%	0.09	188.5	9.9	0.05%	0.12
OTHER INDUSTRIES	165.1	1026.2	2.48%	1.62	162.3	261.8	1.28%	1.46
FUEL	181.1	135.3	0.33%	0.80	146.7	16.6	0.08%	0.24
UTILITIES	185.3	239.1	0.58%	1.06	182.4	42.4	0.21%	0.45
CONSTRUCTION	807.6	7.7	0.02%	0.02	222.9	11.8	0.06%	0.12
REAL ESTATE	2844	150.1	0.36%	0.09	1719.2	90.5	0.44%	0.12
TRANSPORT	797	4042.6	9.76%	1.57	784.9	1920.8	9.40%	1.68
EDUCATION	402.5	21.2	0.05%	0.09	194.5	10.2	0.05%	0.12
HEALTH	826.7	2259.4	5.45%	1.38	814.1	1078.9	5.28%	1.35
OTHER SERVICES	436.5	9934.7	23.98%	1.80	430	5369.8	26.27%	2.19
TOTAL	36526.8	41433.1	100.00%	1.00	27991.8	20438.5	100.00%	1.00

Table 5.9 (Continued)
 Consumption Patterns From Linear Expenditure System
 (Millions Baht per Year)

QUINTILE 5

	FIXED.CON	MARG.CON	MARG.BUD SHARE	CONSUMP ELASTI
RICE	4852.4	255.6	2.39%	0.15
FRUITS AND VGT.	1775.7	93.5	0.87%	0.15
OTHER AGRICULTURE	670.9	35.4	0.33%	0.15
FISH	2391.5	382	3.57%	0.41
MEAT	1925.2	101.3	0.95%	0.15
PROCESSED FOODS	414.3	21.8	0.20%	0.15
OTHER FOODS	1163	61.2	0.57%	0.15
BEVERAGES	-404.6	1425	13.30%	4.14
TOBACCO	507.9	26.7	0.25%	0.15
HOTELS-RESTAURANTS	-1116.2	1723.7	16.09%	8.41
CLOTHING	2069.8	2049.8	19.14%	1.47
WOOD-PAPER-RUBBER PRDS.	877.8	70.8	0.66%	0.22
BASIC INDUSTRIES	1972.2	103.8	0.97%	0.15
APPLIANCES	140.6	7.3	0.07%	0.15
OTHER HOUSEHOLD ITEMS	119.3	6.3	0.06%	0.15
OTHER INDUSTRIES	162.7	53.5	0.50%	0.73
FUEL	78.6	4.1	0.04%	0.15
UTILITIES	128.3	17.1	0.16%	0.35
CONSTRUCTION	153.9	8.1	0.08%	0.15
REAL ESTATE	971.6	51.1	0.48%	0.15
TRANSPORT	801.2	776.3	7.25%	1.46
EDUCATION	110	5.8	0.05%	0.15
HEALTH	830.9	491.5	4.59%	1.10
OTHER SERVICES	439	2938.6	27.44%	2.58
TOTAL	21035.8	10710.3	100.00%	1.00

consumption behavior of each household could be described by a Linear Expenditure System. In this system, each household had a committed expenditure of a certain number of units for each commodity. The total amount left over after the committed expenditures were assumed to be allocated to the various commodities according to a fixed share. Because of the lack of price data, it was only possible to estimate an Extended Linear Expenditure System, which also treated saving as one commodity; see the details in Patmasiriwat and Vachemanut (1988). These were estimated for each household group separately using data in the 1986 Socio-economic Survey. The resulting estimates aggregated by quintile are given in table 5.9. In general, the consumption elasticities appeared fairly sensible.

5.3.5 HOUSEHOLD INCOMES

Households derived incomes from the claims on the factors of production as described earlier. It was assumed that each household retained a fixed share of these claims in the experiments. Thus, if the top quintile of agricultural households got $x\%$ of the total wage in agriculture, then this percentage remained unchanged (the total earnings of wages in agriculture may of course change).

There were also miscellaneous flows of incomes in the SAM, such as transfers from the government to households, etc., these were all taken as exogenous in the model.

5.3.6 TAXES

The business and sales taxes put wedges between producer prices and consumer prices. The import duties put wedges between c.i.f prices of imports and the consumer prices. The

export taxes made domestic prices lower than export prices. Income taxes were collected from households, and corporation taxes were collected from the private corporations. However, because much of the profit in the non-agricultural sectors were due to own-account operations (the unincorporated enterprises), which are difficult to tax effectively, it was assumed that part of the profit from the non-agricultural sectors flowed directly to households (as owners of the unincorporated enterprises), and the rest went to the private corporations, which then had to pay corporation tax on the profit. Profits in agriculture and rents from land used in agricultural production were assumed to be free of corporate tax.

5.3.7 QUANTITIES AND PRICES

For quantity and prices in the model the followings were the main assumptions. All product prices were assumed to be endogenous.¹⁵ Factor supplies were taken as exogenous as already explained. Factor prices were however endogenous. For the public sector employees, it was assumed that their prices would maintain a fixed ratio to that of the private non-agricultural employees. This was done to avoid problems where the price level changes, but the wages in the public sectors remained fixed, leading to the public households either making a windfall gain in the case where the price level falls, or a windfall loss where the opposite is true. In the longer run, it is likely that public sector bargaining power will keep wages in the public sector in line with that in the private sector (an average of both the formal private sector and the

15. This includes prices of products from the state-enterprises. this can be justified in that one wants does not want any implicit subsidies that may arise from public enterprise pricing policy to add noise to the analyses.

informal private sector). On the external trade side, it was assumed that the prices of imports remained fixed in foreign currency, and similarly export prices in foreign currency also remained fixed. Finally, the nominal exchange rate was assumed to be fixed.¹⁶

5.3.8 MACROECONOMIC CLOSURE AND DETERMINATION OF EQUILIBRIUM

Given the various specifications of the cells in the SAM, and the endogenous variables in the system, the search for a new equilibrium after some changes in the exogenous variables involved finding a vector of relative prices that will lead to all markets clearing; product markets, factor markets and the foreign exchange market. The solution will depend on what type of macroeconomic closures are assumed. We considered two different closures. In the first closure, investment was assumed to be fixed nominally, and the current account deficit can adjust.

In this closure, the determination of equilibrium would work as follows. Given a vector of relative prices (the exchange is fixed and can be taken as the numeraire), and the exogenous demands (government consumption and investment), the commodity and factor demands would be determined. This will determine the level of income, and also the current account deficit on the trade side. The incomes determine the savings. However, there may not be an equilibrium in the foreign exchange market. Thus, the current account deficit generated on the trade side may not be equal to the difference between the fixed level of investments and the savings generated from

16. The real exchange rate can of course change depending on how domestic price change, or how the trade taxes change.

the incomes. Thus, the vector of prices is not an equilibrium, and a new vector of prices has to be tried. The equilibrium price vector will clear all the product markets, and also generate precisely the same current account gap from the trade side as from the saving investment side.

For changes in taxes, however, it is quite possible that there can be large changes in the current account deficit. It can be argued that if some tax changes lead to large increases in the deficit, then the changes are not maintainable over the longer run, unless the government carries out some compensating policies to keep the current account under control. Because of this, another closure was also used in the experiments. In this closure, the level of the current account deficit was fixed at the level in the base SAM, and the level of investment was allowed to vary. Here, equilibrium involved determining the vector of relative prices, and the level of investment that will generate exactly the fixed level of current account deficit from both the trade side and the saving-investment side.

5.3.9 METHOD OF ASSESSING TAX INCIDENCE

With these two basic models of the economy, the way that the incidence of a particular tax was assessed was as follows. For each tax, it was assumed that the rate became zero, and that the government replaced the tax by a proportional income tax on household incomes. The rate of this compensating proportional income tax was varied until the total revenue for the government (from all taxes) was the same as before the tax change. This way of assessing the incidence of a particular tax is quite natural. It recognizes that taxes are for raising revenues, so that the removal of a tax has to be replaced by

some other taxes. The proportional income tax that is used as the compensating tax is by definition neutral in terms of income distribution. Thus, a comparison of a particular tax with the proportional income tax should give a good indication of the distributional incidence of the tax. It also recognizes that the government has expenditure requirements which cannot easily be changed, so that in the experiments, it was assumed that both the total amount of taxes and government consumption are fixed.¹⁷

The simulations and results are discussed in the next section.

5.4 The Simulations Assessing Tax Incidence

A large number of different simulations were performed by replacing some group of taxes with a proportional tax on household incomes, and using alternative closure rules for the economy. For each simulation, some taxes were removed and replaced by a proportional tax on household income before income taxes (in the cases where the current structure of income taxes still remains). The proportional rate of compensating income tax was varied until, at the new equilibrium, the total tax revenue of the government was the same as in the base period SAM.

17. In the usual approach to general equilibrium assessment of tax incidence, it is instead assumed that government revenue may change, but that the government adjusts its expenditures so as to keep nominal GDP the same (see for example Devarajan, Fullerton and Musgrave (1980)).

In the simulations, the taxes or group of taxes that were replaced by the proportional income tax were as follows.

1. The current structure of income taxes.
2. The corporate tax.
3. Business tax.
4. Sales tax.
5. Import duties.
6. All indirect taxes.
7. All current taxes.

For each simulation, two alternative closure rules were used.

- A. Investments was assumed exogenous in nominal terms, and the current account was allowed to vary.
- B. The current account was held fixed at the level of the base SAM, and the amount of investment was allowed to vary.

The combinations of the changes in taxes and closure rules yielded 14 different simulations. For each simulation, the result was then compared to the situation before the change in taxes. The relevant results for these basic simulations are assembled in table 5.10-5.31, and are discussed below, taking one tax change at a time.¹⁸ Tables 5.10-5.20 cover the cases

18. The model had 3161 equations. The solution algorithm used was SAMLIB, developed by Arne Drud at the World Bank. For a description of a later version of the software see Drud and Kendrick (1986). For each tax experiment, some initial estimate of the compensating proportional income tax rate was arrived at, the model is then solved removing the tax to be analyzed. The rate of proportion income tax was then adjusted depending on the difference between the government revenue in the solution and the base revenue. For each experiment, it took about 60 periods of simulations to reach the final solution, with the same level of government revenue as in the

with fixed investment, and table 5.21-5.31 the cases with fixed current account deficit. For each table, the base solution is given and the solution for each of the experiment, with the column heading indicating which taxes, or taxes group, are removed and replaced by the proportional tax on household incomes. In tables with growth rates, the rates of change for each tax experiment are those compared to the base case. Thus, for example in table 5.20, indicating the changes in real incomes for each household, the growth rate in each column are based on the changes of the particular tax experiment compared to the base situation. The changes in real incomes, the value of the Gini coefficient and the Shorrocks index are in table 5.20 for the fixed investment case, and in table 5.31 for the fixed current account case.

base SAM. This took about 15 minutes for each tax experiment on an 80386 computer with math co-processor.

Table 5.10
Real Aggregated GDP : Fixed Investment
(Millions of Baht and Percent)

	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
AGRICULTURE	140,709	140,709	140,710	140,687	140,696	140,709	140,734	140,731
MAJOR CROPS	69,829	69,851	69,980	70,006	69,520	69,925	70,683	70,858
OTHER AGRICULTURE	70,880	70,858	70,730	70,681	71,176	70,784	70,051	69,873
INDUSTRIES	341,415	341,396	341,647	347,599	354,418	342,539	361,509	361,667
MANUFACTURING	270,461	270,408	270,537	276,456	283,202	270,689	289,290	289,242
OTHER INDUSTRIES	70,954	70,988	71,111	71,143	71,216	71,850	72,219	72,425
SERVICES	511,560	511,555	510,833	510,075	511,913	510,544	509,272	508,448
TOTAL GDP	993,684	993,660	993,191	998,361	1,007,027	993,792	1,011,515	1,010,846
REAL AGGREGATED GDP								
***+ GROWTH XXI	BASE	TAX	TAX	TAX	TAX	DUTIES	INDIR. TAX	TAXES
AGRICULTURE	0.00	0.00	0.00	-0.02	-0.01	0.00	0.02	0.02
MAJOR CROPS	0.00	0.03	0.22	0.25	-0.44	0.14	1.22	1.47
OTHER AGRICULTURE	0.00	-0.03	-0.21	-0.28	0.42	-0.14	-1.17	-1.42
INDUSTRIES	0.00	-0.01	0.07	1.81	3.81	0.33	5.89	5.93
MANUFACTURING	0.00	-0.02	0.03	2.22	4.71	0.08	6.96	6.94
OTHER INDUSTRIES	0.00	0.05	0.22	0.27	0.37	1.26	1.79	2.07
SERVICES	0.00	-0.00	-0.14	-0.29	0.07	-0.20	-0.45	-0.61
TOTAL GDP	0.00	-0.00	-0.05	0.47	1.34	0.01	1.79	1.73

Table 5.11
Price of Consumption by Sector : Fixed Investment

PRICE CONSUMPTION **** GROWTH %X	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
RICE	0.00	-0.02	-0.29	-0.63	1.13	-0.32	1.78	1.43
FGFR	0.00	-0.05	-0.39	0.85	1.02	-2.61	2.19	1.70
OTH. AGR	0.00	-0.04	-0.32	0.40	1.12	-1.82	2.09	1.69
FISHING	0.00	-0.04	-0.40	-0.37	-1.73	-2.41	-3.32	-3.79
SLAUGH	0.00	-0.04	-0.44	-0.18	1.09	-0.94	1.64	1.11
C-P FOOD	0.00	-0.02	-0.39	-0.58	0.70	-3.06	-2.74	-3.17
BEVERAGE	0.00	-0.02	-0.45	-5.64	-21.40	-2.23	-28.51	-28.88
TOBACCO PROCESS	0.00	-0.03	-0.42	1.58	-53.38	-3.00	-53.72	-53.95
OTHER FOODS	0.00	-0.02	-0.37	-0.29	0.63	-2.62	-0.53	-0.94
CLOTHING	0.00	-0.02	-0.45	-2.89	0.89	-3.74	-5.64	-6.12
W-P-T	0.00	-0.02	-0.38	-2.49	0.76	-3.06	-3.34	-3.76
BASIC INDUST	0.00	-0.02	-0.32	-4.61	-0.28	-3.57	-8.25	-8.59
APPLIAN	0.00	-0.01	-0.30	-1.45	0.71	-5.94	-5.64	-6.96
OTHER H-H ITEM	0.00	-0.01	-0.29	-1.43	0.42	-14.39	-15.17	-15.45
OTHER INDUST	0.00	-0.02	-0.41	-4.28	0.82	-3.55	-6.86	-7.38
FUEL	0.00	-0.01	-0.21	-1.60	-13.48	-4.88	-19.00	-19.26
UTILITY	0.00	-0.05	-0.35	2.51	-6.16	-1.77	-5.38	-5.73
CONSTR	0.00	-0.02	-0.45	-0.19	0.50	-2.40	-2.05	-2.56
HOT-RES	0.00	-0.03	-0.45	-4.01	-0.38	-0.83	-4.97	-5.45
TRANSP	0.00	-0.02	-0.45	1.14	-1.23	-1.96	-1.93	-2.44
REAL ESTATE	0.00	-0.03	-0.63	4.92	2.23	0.03	6.93	6.19
EDUCAT	0.00	-0.03	-0.59	4.04	1.27	-0.62	4.56	3.87
HEALTH	0.00	-0.03	-0.49	1.73	1.16	-2.00	0.89	0.33
OTHER SERVICE	0.00	-0.03	-0.60	0.13	1.78	-0.26	1.47	0.80

Table 5.12
Consumer Price by Household : Fixed Investment

CONSUMER PRICE BY HH *** GROWTH ***	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
AGRICULTURE1	0.00	-0.03	-0.46	-0.89	-1.64	-1.89	-3.98	-4.48
AGRICULTURE2	0.00	-0.03	-0.44	-0.84	-1.69	-1.95	-3.89	-4.36
AGRICULTURE3	0.00	-0.03	-0.44	-0.88	-1.59	-1.99	-3.81	-4.25
AGRICULTURE4	0.00	-0.03	-0.43	-0.76	-1.29	-1.95	-3.24	-3.69
AGRICULTURE5	0.00	-0.03	-0.42	-0.80	-1.15	-1.95	-3.13	-3.56
NON-AGRICULTURE1	0.00	-0.03	-0.47	-0.82	-2.51	-1.82	-4.77	-5.27
NON-AGRICULTURE2	0.00	-0.03	-0.44	-0.89	-3.02	-1.95	-5.20	-5.61
NON-AGRICULTURE3	0.00	-0.03	-0.43	-0.83	-2.29	-1.96	-4.40	-4.83
NON-AGRICULTURE4	0.00	-0.03	-0.42	-0.77	-1.71	-1.99	-3.67	-4.12
NON-AGRICULTURE5	0.00	-0.03	-0.41	-0.88	-1.48	-1.95	-3.46	-3.88
GOVERNMENT1	0.00	-0.03	-0.46	-0.91	-2.22	-1.94	-4.67	-5.18
GOVERNMENT2	0.00	-0.03	-0.44	-0.82	-2.52	-1.98	-4.69	-5.17
GOVERNMENT3	0.00	-0.03	-0.43	-0.99	-2.55	-2.03	-4.81	-5.27
GOVERNMENT4	0.00	-0.03	-0.43	-0.75	-1.20	-1.84	-3.08	-3.53
GOVERNMENT5	0.00	-0.03	-0.44	-0.26	-1.24	-1.75	-2.58	-3.06
ST. ENTERPRISE1	0.00	-0.03	-0.46	-0.70	-2.58	-1.89	-4.75	-5.26
ST. ENTERPRISE2	0.00	-0.03	-0.45	-0.55	-2.30	-2.01	-4.26	-4.74
ST. ENTERPRISE3	0.00	-0.03	-0.42	-0.54	-2.79	-1.68	-4.01	-4.39
ST. ENTERPRISE5	0.00	-0.03	-0.38	-0.58	-1.52	-1.45	-2.29	-2.51
ALL HOUSEHOLDS	0.00	-0.03	-0.45	-0.84	-2.22	-1.89	-4.46	-4.94

Table 5.13
External Trade : Fixed Investment
(Millions of Baht)

EXTERNAL BALANCE	BASE	INCOME	CORPORATE	BUSINESS	SALES	IMPORT	ALL	ALL
		TAX	TAX	TAX	TAX	DUTIES	INDIR. TAX	TAXES
EXPORTS	187,131	187,175	187,738	188,919	186,651	189,012	191,105	191,819
RICE	23,734	23,749	23,907	24,113	23,078	23,925	22,713	22,909
OTHER FOODS	31,113	31,135	31,415	30,814	30,668	31,982	32,991	33,351
OTHER EXPORTS	132,284	132,291	132,416	133,992	132,884	133,104	135,401	135,560
TOURISM	27,317	27,321	27,375	27,484	27,484	27,721	28,038	28,105
REMITTANCES	26,603	26,603	26,603	26,603	26,603	26,603	26,603	26,603
INTERESTS	5,211	5,211	5,211	5,211	5,211	5,211	5,211	5,211
TOTAL EXPORTS	246,262	246,309	246,926	248,216	245,948	248,546	250,956	251,738
IMPORTS	264,428	264,406	264,016	263,487	264,690	278,320	277,521	277,043
INTERESTS	35,430	35,430	35,430	35,430	35,430	35,430	35,430	35,430
TOTAL IMPORTS	299,858	299,835	299,446	298,917	300,120	313,750	312,950	312,473
NET TRANSFER	4,127	4,127	4,127	4,127	4,127	4,127	4,127	4,127
CUR-ACCOUNT DEFICIT	49,470	49,400	48,392	46,574	50,045	61,077	57,867	56,608
DIRECT INVESTMENT	9,625	9,625	9,625	9,625	9,625	9,625	9,625	9,625

Table 5.14
Saving-Investment Balance : Fixed Investment
(Millions of Baht)

SAV-INV BALANCE	BASE	INCOME	CORPORATE	BUSINESS	SALES	IMPORT	ALL	ALL
		TAX	TAX	TAX	TAX	DUTIES	INDIR. TAX	TAXES
HOUSEHOLD SAVING	73,136	73,245	67,960	67,476	69,291	60,931	52,693	47,409
HOUSEHOLD INVESTM	32,267	32,267	32,267	32,267	32,267	32,267	32,267	32,267
NET HOUSEHOLD SAVING	40,869	40,978	35,693	35,209	37,024	28,664	20,426	15,142
GOVERNMENT SAVING	4,069	4,069	4,069	4,069	4,069	4,069	4,069	4,069
GOVERNMENT INVESTM	37,810	37,810	37,810	37,810	37,810	37,810	37,810	37,810
NET GOVERNMENT SAV	(33,741)	(33,741)	(33,741)	(33,741)	(33,741)	(33,741)	(33,741)	(33,741)
ST. ENT SAVING	31,043	31,030	30,772	33,789	32,092	31,235	34,909	34,586
ST. ENT INVESTM	41,590	41,590	41,590	41,590	41,590	41,590	41,590	41,590
NET ST. ENT SAVING	(10,547)	(10,560)	(10,818)	(7,801)	(9,498)	(10,355)	(6,681)	(7,004)
PRV. CORP SAVING	75,330	75,303	81,853	81,139	77,550	75,736	83,509	90,374
PRV. CORP INVESTM	121,380	121,380	121,380	121,380	121,380	121,380	121,380	121,380
NET PRV. CORP SAVING	(46,050)	(46,077)	(39,527)	(40,240)	(43,830)	(45,644)	(37,871)	(31,006)
TOTAL SAVING	183,577	183,647	184,654	186,473	183,002	171,970	175,179	176,438
TOTAL INVESTMENT	233,047	233,047	233,047	233,047	233,047	233,047	233,047	233,047
CUR-ACCOUNT DEFICIT	49,470	49,400	48,392	46,574	50,045	61,077	57,867	56,608

Table 5.15
Factor Incomes and Growth : Fixed Investment
(Millions of Baht and Percent)

FACTOR INCOMES	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
AGRICULTURE SURPLUS	29,466	29,433	29,326	30,349	30,135	29,533	32,116	31,922
AGRICULTURE LAND	38,623	38,622	38,609	39,964	38,918	38,671	42,646	42,624
NON-AGRIC SURPLUS	492,077	491,927	488,844	524,917	504,628	494,373	538,311	534,454
WAGE AGRICULTURE	68,392	68,368	68,236	70,611	69,267	68,426	74,859	74,648
WAGE NON-AGRIC	161,351	161,301	160,235	171,997	165,800	162,166	176,754	175,416
WAGE GOVERNMENT	69,833	69,811	69,350	74,440	71,759	70,186	76,499	75,920
WAGE ST. ENTERPRISE	15,600	15,595	15,492	16,630	16,031	15,679	17,090	16,960
FACTOR INCOMES **** GROWTH %	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
AGRICULTURE SURPLUS	0.00	-0.11	-0.47	3.00	2.27	0.23	9.00	8.34
AGRICULTURE LAND	0.00	-0.00	-0.04	3.47	0.76	0.12	10.42	10.36
NON-AGRIC SURPLUS	0.00	-0.03	-0.66	6.67	2.55	0.47	9.40	8.61
WAGE AGRICULTURE	0.00	-0.03	-0.23	3.24	1.28	0.05	9.46	9.15
WAGE NON-AGRIC	0.00	-0.03	-0.69	6.60	2.76	0.51	9.55	8.72
WAGE GOVERNMENT	0.00	-0.03	-0.69	6.60	2.76	0.50	9.55	8.72
WAGE ST. ENTERPRISE	0.00	-0.03	-0.69	6.60	2.76	0.50	9.55	8.72

Table 5.16
Factor Price Growth : Fixed Investment

FACTOR PRICES **** GROWTH %	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
AGRICULTURE SURPLUS	0.00	-0.11	-0.47	3.00	2.27	0.23	9.00	8.34
AGRICULTURE LAND	0.00	-0.00	-0.04	3.47	0.76	0.12	10.42	10.36
NON-AGRIC SURPLUS	0.00	-0.03	-0.66	6.67	2.55	0.47	9.40	8.61
WAGE AGRICULTURE	0.00	-0.03	-0.23	3.25	1.28	0.05	9.46	9.15
WAGE NON-AGRIC	0.00	-0.03	-0.69	6.60	2.76	0.50	9.55	8.72
WAGE GOVERNMENT	0.00	-0.03	-0.69	6.60	2.76	0.50	9.55	8.72
WAGE ST. ENTERPRISE	0.00	-0.03	-0.69	6.60	2.76	0.50	9.55	8.72

Table 5.17
Tax Revenues : Fixed Investment
(Millions of Baht)

TAX REVENUES	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIV. TAX	ALL TAXES
BUSINESS TAX	58,687	58,663	58,380	0	59,836	57,897	0	0
IMPORT TAX	29,692	29,688	29,645	29,617	29,737	0	0	0
EXPORT TAX	1,862	1,863	1,871	1,829	1,830	1,878	0	0
CORPORATION TAX	19,083	19,079	0	19,954	19,416	19,144	20,310	0
INCOME TAX	21,976	0	21,667	21,643	21,739	21,162	20,594	0
EXCISE TAX	28,101	28,880	27,875	28,501	0	27,132	0	0
COMPENSATE TAX	0	22,829	19,963	57,856	26,844	32,188	118,498	159,401
TOTAL TAX	159,401	159,401	159,401	159,401	159,401	159,401	159,401	159,401

Table 5.18
Final Demand : Fixed Investment
(Millions of Baht and Percent)

FINAL DEMAND	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIV. TAX	ALL TAXES
H-H CONSUMPTION	677,549	677,144	670,650	669,824	672,379	661,412	650,537	642,948
GOVERN CONSUMPTION	133,070	133,070	133,070	133,070	133,070	133,070	133,070	133,070
PUBLIC ADMINIST	44,902	44,887	44,575	48,035	46,200	45,139	49,423	49,031
NET INVESTMENT	233,046	233,047	233,047	233,047	233,047	233,047	233,047	233,047
EXPORTS	187,131	187,175	187,738	188,919	186,651	189,012	191,105	191,819
TOURISTS	27,317	27,321	27,375	27,484	27,484	27,721	28,038	28,105
TOTAL FINAL DEMAND	1,303,014	1,302,643	1,296,455	1,300,377	1,298,830	1,289,401	1,285,219	1,278,021

FINAL DEMAND **** GROWTH %	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIV. TAX	ALL TAXES
H-H CONSUMPTION	0.00	-0.06	-1.02	-1.14	-0.76	-2.38	-3.99	-5.11
GOVERN CONSUMPTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PUBLIC ADMINIST	0.00	-0.03	-0.73	6.98	2.89	0.53	10.07	9.20
NET INVESTMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EXPORTS	0.00	0.02	0.32	0.96	-0.26	1.01	2.12	2.51
TOURISTS	0.00	0.01	0.21	0.61	0.61	1.48	2.64	2.88
TOTAL FINAL DEMAND	0.00	-0.03	-0.50	-0.20	-0.32	-1.04	-1.37	-1.92

Table 5.19
Nominal Income Growth : Fixed Investment

NOMINAL H-H INCOME **** GROWTH %	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
AGRICULTURE1	0.00	-0.87	-1.31	-2.86	-1.64	-3.85	-6.42	-8.61
AGRICULTURE2	0.00	-1.66	-1.91	-2.75	-1.59	-3.85	-6.17	-9.64
AGRICULTURE3	0.00	-1.79	-1.91	-2.97	-1.68	-3.88	-6.13	-9.72
AGRICULTURE4	0.00	-1.83	-1.87	-3.08	-1.73	-3.89	-6.06	-9.65
AGRICULTURE5	0.00	-1.79	-1.75	-3.01	-1.70	-3.89	-6.06	-9.50
NON-AGRICULTURE1	0.00	0.58	-1.71	-1.22	-0.98	-3.67	-6.27	-7.51
NON-AGRICULTURE2	0.00	-1.02	-2.26	-1.25	-0.98	-3.68	-6.16	-9.38
NON-AGRICULTURE3	0.00	-1.51	-2.29	-1.34	-1.02	-3.69	-6.10	-9.80
NON-AGRICULTURE4	0.00	-0.91	-1.57	-1.52	-1.09	-3.71	-6.17	-8.66
NON-AGRICULTURE5	0.00	-1.41	-1.81	-1.61	-1.13	-3.72	-6.12	-9.30
GOVERNMENT1	0.00	2.11	-0.29	-1.38	-0.98	-3.67	-6.41	-4.92
GOVERNMENT2	0.00	-0.07	-1.33	-1.38	-0.98	-3.68	-6.17	-7.67
GOVERNMENT3	0.00	0.06	-0.91	-1.63	-1.09	-3.71	-6.20	-7.20
GOVERNMENT4	0.00	-2.23	-2.35	-2.59	-1.50	-3.81	-6.65	-11.02
GOVERNMENT5	0.00	-1.79	-1.87	-1.99	-1.24	-3.76	-6.08	-9.64
ST. ENTERPRISE1	0.00	2.91	-1.23	-1.41	-0.98	-3.67	-6.42	-5.07
ST. ENTERPRISE2	0.00	0.53	-2.25	-1.03	-0.80	-3.64	-5.89	-7.69
ST. ENTERPRISE3	0.00	-1.03	-3.20	-0.89	-0.71	-3.62	-5.74	-9.83
ST. ENTERPRISE5	0.00	-2.85	-3.13	-1.33	-0.94	-3.69	-5.74	-11.44
ALL HOUSEHOLDS	0.00	-0.04	-1.59	-1.76	-1.19	-3.73	-6.25	-7.95

Table 5.20
Real Income Growth and Inequality Measures : Fixed Investment

REAL H-H INCOME **** GROWTH %	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR.TAX	ALL TAXES
AGRICULTURE1	0.00	-0.84	-0.85	-1.99	0.00	-2.00	-2.54	-4.33
AGRICULTURE2	0.00	-1.64	-1.47	-1.93	0.10	-1.93	-2.36	-5.52
AGRICULTURE3	0.00	-1.76	-1.48	-2.10	-0.09	-1.92	-2.41	-5.71
AGRICULTURE4	0.00	-1.80	-1.45	-2.34	-0.45	-1.99	-2.91	-6.19
AGRICULTURE5	0.00	-1.76	-1.33	-2.22	-0.56	-1.97	-3.02	-6.16
NON-AGRICULTURE1	0.00	0.61	-1.25	-0.40	1.56	-1.89	-1.57	-2.36
NON-AGRICULTURE2	0.00	-0.99	-1.83	-0.36	2.10	-1.76	-1.01	-3.99
NON-AGRICULTURE3	0.00	-1.48	-1.86	-0.51	1.30	-1.76	-1.79	-5.22
NON-AGRICULTURE4	0.00	-0.88	-1.15	-0.76	0.62	-1.75	-2.59	-4.73
NON-AGRICULTURE5	0.00	-1.39	-1.41	-0.74	0.36	-1.81	-2.76	-5.64
GOVERNMENT1	0.00	2.13	0.17	-0.47	1.26	-1.77	-1.82	0.27
GOVERNMENT2	0.00	-0.05	-0.90	-0.57	1.58	-1.74	-1.55	-2.64
GOVERNMENT3	0.00	0.09	-0.49	-0.65	1.50	-1.71	-1.47	-2.04
GOVERNMENT4	0.00	-2.20	-1.93	-1.86	-0.30	-2.00	-3.69	-7.77
GOVERNMENT5	0.00	-1.76	-1.44	-1.73	0.00	-2.05	-3.59	-6.80
ST. ENTERPRISE1	0.00	2.93	-0.77	-0.71	1.64	-1.82	-1.75	0.20
ST. ENTERPRISE2	0.00	0.56	-1.81	-0.48	1.53	-1.67	-1.70	-3.09
ST. ENTERPRISE3	0.00	-1.00	-2.79	-0.35	2.14	-1.98	-1.80	-5.69
ST. ENTERPRISE5	0.00	-2.82	-2.75	-0.75	0.58	-2.28	-3.54	-9.15
ALL HOUSEHOLDS	0.00	-0.01	-1.14	-0.93	1.05	-1.87	-1.88	-3.16

Table 5.21
 Real Aggregated GDP : Fixed Current Account
 (Millions of Baht and Percent)

REAL AGGREGATED GDP	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
AGRICULTURE	140,709	140,709	140,711	140,687	140,696	140,798	140,731	140,729
MAJOR CROPS	69,829	69,849	69,956	69,940	69,533	70,152	70,828	70,979
OTHER AGRICULTURE	70,880	70,860	70,755	70,747	71,163	70,556	69,903	69,750
INDUSTRIES	341,415	341,415	341,941	348,368	354,267	339,489	359,455	359,919
MANUFACTURING	270,461	270,409	270,540	276,446	283,206	270,679	289,422	289,358
OTHER INDUSTRIES	70,954	71,006	71,402	71,922	71,061	68,810	70,032	70,561
SERVICES	511,560	511,549	510,727	509,832	511,966	511,765	509,999	509,076
TOTAL GDP	993,684	993,673	993,379	999,887	1,006,929	991,962	1,010,184	1,009,724
REAL AGGREGATED GDP **** GROWTH %	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
AGRICULTURE	0.00	0.00	0.00	-0.02	-0.01	-0.00	0.02	0.01
MAJOR CROPS	0.00	0.03	0.18	0.16	-0.42	0.46	1.43	1.65
OTHER AGRICULTURE	0.00	-0.03	-0.18	-0.19	0.40	-0.46	-1.38	-1.59
INDUSTRIES	0.00	0.00	0.15	2.04	3.76	-0.56	5.28	5.42
MANUFACTURING	0.00	-0.02	0.03	2.21	4.71	0.08	7.01	6.99
OTHER INDUSTRIES	0.00	0.07	0.63	1.36	0.15	-3.02	-1.30	-0.55
SERVICES	0.00	-0.00	-0.16	-0.34	0.08	0.04	-0.31	-0.49
TOTAL GDP	0.00	-0.00	-0.03	0.52	1.33	-0.17	1.66	1.61

Table 3.22
Price of Consumption by Sector : Fixed Current Account

PRICE CONSUMPTION **** GROWTH %	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
RICE	0.00	-0.02	-0.25	-0.53	1.11	-0.65	1.53	1.22
VEGET	0.00	-0.05	-0.42	0.78	1.03	-2.29	2.43	1.91
OTH. AGE	0.00	-0.04	-0.32	0.42	1.11	-1.86	2.08	1.68
FISHING	0.00	-0.03	-0.26	-0.01	-1.80	-3.72	-4.27	-4.59
SLAUGH	0.00	-0.03	-0.32	0.15	1.02	-2.12	0.77	0.38
C-P FOOD	0.00	-0.01	-0.19	-0.05	0.59	-4.96	-4.14	-4.36
BEVERAGE	0.00	-0.01	-0.22	-5.04	-21.50	-4.50	-29.74	-29.92
TOBACCO PROCESS	0.00	-0.01	-0.22	2.12	-53.43	-4.90	-54.40	-54.52
OTHER FOODS	0.00	-0.01	-0.21	0.16	0.54	-4.21	-1.71	-1.93
CLOTHING	0.00	-0.01	-0.21	-2.25	0.75	-6.10	-7.34	-7.56
W-P-T	0.00	-0.01	-0.20	-2.00	0.66	-4.80	-4.61	-4.83
BASIC INDUST	0.00	-0.00	-0.15	-4.16	-0.37	-5.27	-9.46	-9.61
APPLIAN	0.00	-0.00	-0.14	-1.00	0.62	-7.53	-7.81	-7.95
OTHER H-H ITEM	0.00	-0.01	-0.14	-1.03	0.33	-15.69	-16.12	-16.25
OTHER INDUST	0.00	-0.00	-0.18	-3.69	0.70	-5.74	-8.43	-8.63
FUEL	0.00	-0.00	-0.09	-1.29	-13.53	-6.01	-19.72	-19.81
UTILITY	0.00	-0.03	-0.10	3.20	-6.29	-4.23	-7.16	-7.24
CONSTR	0.00	-0.01	-0.20	0.48	0.36	-4.85	-3.88	-4.10
HOT-RES	0.00	-0.01	-0.22	-3.40	-0.50	-3.14	-6.59	-6.82
TRANSP	0.00	-0.01	-0.20	1.83	-1.37	-4.42	-3.78	-4.00
REAL ESTATE	0.00	-0.01	-0.28	5.91	2.04	-3.43	4.24	3.92
EDUCAT	0.00	-0.01	-0.26	4.96	1.09	-3.85	2.07	1.76
HEALTH	0.00	-0.01	-0.22	2.46	1.01	-4.58	-1.07	-1.33
OTHER SERVICE	0.00	-0.01	-0.27	1.03	1.60	-3.48	-0.96	-1.26

Table 5.23
Consumer Price by Household : Fixed Current Account

CONSUMER PRICE BY HH **** GROWTH %X	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR.TAX	ALL TAXES
AGRICULTURE1	0.00	-0.01	-0.24	-0.30	-1.76	-4.06	-5.54	-5.80
AGRICULTURE2	0.00	-0.01	-0.24	-0.30	-1.80	-3.93	-5.32	-5.56
AGRICULTURE3	0.00	-0.02	-0.24	-0.37	-1.69	-3.86	-5.16	-5.40
AGRICULTURE4	0.00	-0.02	-0.25	-0.28	-1.39	-3.70	-4.52	-4.76
AGRICULTURE5	0.00	-0.02	-0.25	-0.33	-1.24	-3.66	-4.38	-4.62
NON-AGRICULTURE1	0.00	-0.01	-0.24	-0.21	-2.63	-4.06	-6.36	-6.62
NON-AGRICULTURE2	0.00	-0.01	-0.24	-0.35	-3.13	-3.92	-6.58	-6.77
NON-AGRICULTURE3	0.00	-0.01	-0.24	-0.32	-2.39	-3.84	-5.73	-5.95
NON-AGRICULTURE4	0.00	-0.02	-0.25	-0.28	-1.80	-3.74	-4.92	-5.17
NON-AGRICULTURE5	0.00	-0.02	-0.24	-0.42	-1.57	-3.59	-4.64	-4.86
GOVERNMENT1	0.00	-0.01	-0.23	-0.30	-2.34	-4.15	-6.25	-6.51
GOVERNMENT2	0.00	-0.01	-0.24	-0.29	-2.63	-3.93	-6.08	-6.34
GOVERNMENT3	0.00	-0.02	-0.24	-0.51	-2.65	-3.80	-6.06	-6.32
GOVERNMENT4	0.00	-0.02	-0.24	-0.24	-1.31	-3.67	-4.41	-4.64
GOVERNMENT5	0.00	-0.01	-0.24	0.26	-1.35	-3.65	-3.98	-4.23
ST. ENTERPRISE1	0.00	-0.01	-0.23	-0.10	-2.70	-4.10	-6.33	-6.60
ST. ENTERPRISE2	0.00	-0.01	-0.24	0.02	-2.41	-4.06	-5.73	-5.98
ST. ENTERPRISE3	0.00	-0.02	-0.25	-0.09	-2.88	-3.31	-5.14	-5.34
ST. ENTERPRISE5	0.00	-0.02	-0.26	-0.25	-1.58	-2.62	-3.09	-3.17
ALL HOUSEHOLDS	0.00	-0.01	-0.24	-0.27	-2.33	-3.99	-5.95	-6.21

Table 5.24
External Trade : Fixed Current Account
(Millions of Baht)

EXTERNAL BALANCE	BASE	INCOME	CORPORATE	BUSINESS	SALES	IMPORT	ALL	ALL
		TAX	TAX	TAX	TAX	DUTIES	INDIR. TAX	TAXES
EXPORTS	187,131	187,164	187,571	188,467	186,740	190,725	192,352	192,880
RICE	23,734	23,747	23,885	24,054	23,090	24,126	22,853	23,025
OTHER FOODS	31,113	31,129	31,334	30,596	30,732	32,829	33,593	33,864
OTHER EXPORTS	132,284	132,287	132,352	133,816	132,918	133,769	135,905	135,991
TOURISM	27,317	27,319	27,345	27,402	27,500	28,034	28,270	28,302
REMITTANCES	26,603	26,603	26,603	26,603	26,603	26,603	26,603	26,603
INTERESTS	5,211	5,211	5,211	5,211	5,211	5,211	5,211	5,211
TOTAL EXPORTS	246,262	246,296	246,729	247,683	246,054	250,572	252,435	252,996
IMPORTS	264,428	264,462	264,895	265,849	264,221	268,739	270,601	271,162
INTERESTS	35,430	35,430	35,430	35,430	35,430	35,430	35,430	35,430
TOTAL IMPORTS	299,858	299,892	300,325	301,279	299,651	304,168	306,031	306,592
NET TRANSFER	4,127	4,127	4,127	4,127	4,127	4,127	4,127	4,127
CUR-ACCOUNT DEFICIT	49,470	49,470	49,470	49,470	49,470	49,470	49,470	49,470
DIRECT INVESTMENT	9,625	9,625	9,625	9,625	9,625	9,625	9,625	9,625

Table 5.25
Saving-investment Balance : Fixed Current Account
(Millions of Baht)

SAV-INV BALANCE	BASE	INCOME	CORPORATE	BUSINESS	SALES	IMPORT	ALL	ALL
		TAX	TAX	TAX	TAX	DUTIES	INDIR. TAX	TAXES
HOUSEHOLD SAVING	73,136	73,313	69,005	70,287	68,722	51,115	45,636	41,504
HOUSEHOLD INVESTM	32,267	32,267	32,267	32,267	32,267	32,267	32,267	32,267
NET HOUSEHOLD SAVING	40,869	41,046	36,738	38,020	36,455	18,848	13,369	9,237
GOVERNMENT SAVING	4,069	4,069	4,069	4,069	4,069	4,069	4,069	4,069
GOVERNMENT INVESTM	37,810	37,979	40,422	44,862	36,405	11,716	18,689	21,549
NET GOVERNMENT SAV	(33,741)	(33,910)	(36,353)	(40,793)	(32,336)	(7,647)	(14,620)	(17,480)
ST. ENT SAVING	31,043	31,040	30,924	34,220	32,008	29,736	33,732	33,591
ST. ENT INVESTM	41,590	41,590	41,590	41,590	41,590	41,590	41,590	41,590
NET ST. ENT SAVING	(10,547)	(10,550)	(10,666)	(7,370)	(9,582)	(11,854)	(7,858)	(7,999)
PRV. CORP SAVING	75,330	75,324	82,191	82,053	77,373	72,564	81,020	88,152
PRV. CORP INVESTM	121,380	121,380	121,380	121,380	121,380	121,380	121,380	121,380
NET PRV. CORP SAVING	(46,050)	(46,056)	(39,189)	(39,327)	(44,007)	(48,816)	(40,360)	(33,228)
TOTAL SAVING	183,577	183,746	186,190	190,629	182,172	157,483	164,456	167,316
TOTAL INVESTMENT	233,047	233,215	235,659	240,099	231,642	206,953	213,926	216,786
CUR-ACCOUNT DEFICIT	49,470	49,469	49,469	49,469	49,469	49,470	49,470	49,469

Table 5.26
Factor Incomes and Growth : Fixed Current Account
(Millions of Baht and Percent)

FACTOR INCOMES	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
AGRICULTURE SURPLUS	29,466	29,431	29,294	30,259	30,154	29,893	32,390	32,158
AGRICULTURE LAND	38,623	38,618	38,550	39,802	38,950	39,272	43,092	43,005
NON-AGRIC SURPLUS	492,077	492,045	490,656	530,081	503,629	476,447	524,240	522,559
WAGE AGRICULTURE	68,392	68,362	68,151	70,377	69,314	69,312	75,519	75,213
WAGE NON-AGRIC	161,351	161,340	160,839	173,716	165,467	156,197	172,066	171,454
WAGE GOVERNMENT	69,833	69,828	69,611	75,185	71,614	67,602	74,470	74,206
WAGE ST. ENTERPRISE	15,600	15,599	15,551	16,796	15,998	15,102	16,636	16,577
FACTOR INCOMES **** GROWTH %	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
AGRICULTURE SURPLUS	0.00	-0.12	-0.58	2.69	2.34	1.45	9.93	9.14
AGRICULTURE LAND	0.00	-0.01	-0.19	3.05	0.85	1.68	11.57	11.34
NON-AGRIC SURPLUS	0.00	-0.01	-0.29	7.72	2.35	-3.18	6.54	6.19
WAGE AGRICULTURE	0.00	-0.04	-0.35	2.90	1.35	1.35	10.42	9.97
WAGE NON-AGRIC	0.00	-0.01	-0.32	7.66	2.55	-3.19	6.64	6.26
WAGE GOVERNMENT	0.00	-0.01	-0.32	7.66	2.55	-3.19	6.64	6.26
WAGE ST. ENTERPRISE	0.00	-0.01	-0.32	7.66	2.55	-3.19	6.64	6.26

Table 5.27
Factor Price Growth : Fixed Current Account

FACTOR PRICES **** GROWTH %	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
AGRICULTURE SURPLUS	0.00	-0.12	-0.58	2.69	2.33	1.45	9.93	9.14
AGRICULTURE LAND	0.00	-0.01	-0.19	3.05	0.85	1.68	11.57	11.35
NON-AGRIC SURPLUS	0.00	-0.01	-0.29	7.72	2.35	-3.18	6.54	6.19
WAGE AGRICULTURE	0.00	-0.04	-0.35	2.90	1.35	1.35	10.42	9.98
WAGE NON-AGRIC	0.00	-0.01	-0.32	7.66	2.55	-3.19	6.64	6.26
WAGE GOVERNMENT	0.00	-0.01	-0.32	7.66	2.55	-3.19	6.64	6.26
WAGE ST. ENTERPRISE	0.00	-0.01	-0.32	7.66	2.55	-3.19	6.64	6.26

Table 5.28
Tax Revenues : Fixed Current Account
(Millions of Baht)

TAX REVENUES	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
BUSINESS TAX	58,687	58,673	58,530	0	59,753	56,426	0	0
IMPORT TAX	29,692	29,695	29,757	29,920	29,677	0	0	0
EXPORT TAX	1,862	1,863	1,871	1,830	1,829	1,875	0	0
CORPORATION TAX	19,083	19,082	0	20,091	19,389	18,668	19,936	0
INCOME TAX	21,976	0	21,745	21,853	21,696	20,423	20,062	0
VALUE ADDED TAX	0	0	0	0	0	0	0	0
EXCISE TAX	28,101	28,083	27,922	28,629	0	26,694	0	0
COMPENSATE TAX	0	22,006	19,576	57,877	27,056	35,315	119,402	159,401
TOTAL TAX	159,401	159,401	159,402	159,401	159,401	159,401	159,401	159,401

Table 5.29
Final Demand : Fixed Current Account
(Millions of Baht and Percent)

FINAL DEMAND	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
H-H CONSUMPTION	677,549	677,231	671,984	673,406	671,653	648,778	641,399	635,295
GOVERNMENT CONSUMPTION	133,070	133,070	133,070	133,070	133,070	133,070	133,070	133,070
PUBLIC ADMINIST	44,902	44,898	44,752	48,539	46,102	43,387	48,047	47,868
NET INVESTMENT	233,046	233,215	235,659	240,099	231,642	206,953	213,926	216,786
EXPORTS	187,131	187,164	187,571	188,467	186,740	190,725	192,352	192,880
TOURISTS	27,317	27,319	27,345	27,402	27,500	28,034	28,270	28,302
TOTAL FINAL DEMAND	1,303,014	1,302,897	1,300,380	1,310,983	1,296,707	1,250,947	1,257,062	1,254,202

FINAL DEMAND	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR. TAX	ALL TAXES
**** GROWTH %								
H-H CONSUMPTION	0.00	-0.05	-0.82	-0.61	-0.87	-4.25	-5.34	-6.24
GOVERNMENT CONSUMPTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PUBLIC ADMINIST	0.00	-0.01	-0.33	8.10	2.67	-3.37	7.00	6.61
NET INVESTMENT	0.00	0.07	1.12	3.03	-0.60	-11.20	-8.20	-6.98
EXPORTS	0.00	0.02	0.24	0.71	-0.21	1.92	2.79	3.07
TOURISTS	0.00	0.00	0.10	0.31	0.67	2.62	3.49	3.61
TOTAL FINAL DEMAND	0.00	-0.01	-0.20	0.61	-0.48	-4.00	-3.53	-3.75

Table 5.30
Nominal Income Growth : Fixed Current Account

NOMINAL H-H INCOME **** GROWTH %X	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIV. TAX	ALL TAXES
AGRICULTURE1	0.00	-0.86	-1.15	-2.44	-1.72	-5.28	-7.49	-9.51
AGRICULTURE2	0.00	-1.65	-1.76	-2.34	-1.68	-5.26	-7.22	-10.51
AGRICULTURE3	0.00	-1.78	-1.79	-2.65	-1.75	-4.94	-6.94	-10.39
AGRICULTURE4	0.00	-1.82	-1.77	-2.83	-1.78	-4.72	-6.71	-10.19
AGRICULTURE5	0.00	-1.78	-1.64	-2.72	-1.76	-4.83	-6.79	-10.11
NON-AGRICULTURE1	0.00	0.61	-1.32	-0.16	-1.20	-7.43	-8.96	-9.76
NON-AGRICULTURE2	0.00	-0.99	-1.88	-0.21	-1.19	-7.34	-8.79	-11.53
NON-AGRICULTURE3	0.00	-1.49	-1.93	-0.35	-1.22	-7.18	-8.61	-11.84
NON-AGRICULTURE4	0.00	-0.88	-1.23	-0.59	-1.28	-6.97	-8.51	-10.59
NON-AGRICULTURE5	0.00	-1.39	-1.49	-0.74	-1.31	-6.81	-8.35	-11.12
GOVERNMENT1	0.00	2.13	0.10	-0.33	-1.20	-7.37	-9.05	-7.20
GOVERNMENT2	0.00	-0.05	-0.96	-0.39	-1.18	-7.21	-8.70	-9.79
GOVERNMENT3	0.00	0.08	-0.58	-0.73	-1.27	-6.88	-8.49	-9.11
GOVERNMENT4	0.00	-2.21	-2.13	-2.01	-1.62	-5.84	-8.14	-12.23
GOVERNMENT5	0.00	-1.76	-1.60	-1.27	-1.39	-6.31	-7.94	-11.16
ST. ENTERPRISE1	0.00	2.93	-0.84	-0.37	-1.19	-7.36	-9.06	-7.34
ST. ENTERPRISE2	0.00	0.56	-1.84	0.08	-1.03	-7.54	-8.68	-10.02
ST. ENTERPRISE3	0.00	-1.00	-2.78	0.25	-0.94	-7.66	-8.63	-12.19
ST. ENTERPRISE5	0.00	-2.83	-2.79	-0.38	-1.14	-7.03	-8.14	-13.35
ALL HOUSEHOLDS	0.00	-0.02	-1.28	-0.92	-1.36	-6.69	-8.38	-9.73

Table 5.31
Real Income Growth and Inequality Measures : Fixed Current Account

REAL H-H INCOME **** GROWTH %	BASE	INCOME TAX	CORPORATE TAX	BUSINESS TAX	SALES TAX	IMPORT DUTIES	ALL INDIR.TAX	ALL TAXES
AGRICULTURE1	0.00	-0.85	-0.91	-2.15	0.04	-1.27	-2.06	-3.94
AGRICULTURE2	0.00	-1.64	-1.52	-2.04	0.12	-1.39	-2.01	-5.25
AGRICULTURE3	0.00	-1.76	-1.55	-2.29	-0.06	-1.12	-1.87	-5.28
AGRICULTURE4	0.00	-1.80	-1.53	-2.56	-0.40	-1.06	-2.29	-5.70
AGRICULTURE5	0.00	-1.76	-1.39	-2.40	-0.53	-1.21	-2.52	-5.76
NON-AGRICULTURE1	0.00	0.62	-1.08	0.05	1.47	-3.52	-2.77	-3.37
NON-AGRICULTURE2	0.00	-0.98	-1.64	0.14	2.00	-3.56	-2.36	-5.11
NON-AGRICULTURE3	0.00	-1.47	-1.69	-0.03	1.20	-3.47	-3.05	-6.26
NON-AGRICULTURE4	0.00	-0.87	-0.99	-0.31	0.53	-3.35	-3.78	-5.72
NON-AGRICULTURE5	0.00	-1.38	-1.25	-0.31	0.27	-3.34	-3.89	-6.58
GOVERNMENT1	0.00	2.14	0.33	-0.03	1.17	-3.36	-2.99	-0.73
GOVERNMENT2	0.00	-0.03	-0.72	-0.10	1.49	-3.42	-2.80	-3.68
GOVERNMENT3	0.00	0.10	-0.33	-0.23	1.42	-3.20	-2.59	-2.98
GOVERNMENT4	0.00	-2.20	-1.90	-1.77	-0.32	-2.25	-3.91	-7.96
GOVERNMENT5	0.00	-1.75	-1.36	-1.53	-0.04	-2.75	-4.13	-7.22
ST. ENTERPRISE1	0.00	2.95	-0.61	-0.27	1.55	-3.39	-2.91	-0.80
ST. ENTERPRISE2	0.00	0.57	-1.61	0.06	1.42	-3.63	-3.14	-4.30
ST. ENTERPRISE3	0.00	-0.98	-2.53	0.34	1.99	-4.50	-3.68	-7.23
ST. ENTERPRISE5	0.00	-2.82	-2.54	-0.13	0.45	-4.52	-5.21	-10.52
ALL HOUSEHOLDS	0.00	-0.01	-1.04	-0.65	0.99	-2.81	-2.58	-3.76
TOTAL SHORROCK	0.62978	0.64101	0.63268	0.63067	0.63651	0.62138	0.62836	0.64267
GINI INDEX	0.554	0.558	0.555	0.557	0.557	0.551	0.554	0.559

5.4.1 INCOME TAXES

Here, the result is obvious. The current structure of income tax is progressive, with the richer households generally paying a higher proportion of income as income taxes. Replacing the current pattern with a proportionate income tax will lead to increasing inequality.

The two inequality measures that were used to compare the changes in income distribution were the Gini coefficient, and the Shorrocks index.¹⁹ The calculation of the Gini assumed that households within each of the 19 group of households in the model all had the same income equal to the mean for the group. The Shorrocks index can be conveniently decomposed into a within group and a between group component.²⁰ For the 19 household groups in the model, most of the inequality arose from the between groups component, which is to be expected as differences in income levels was one dimension in splitting up the households. In calculating the Shorrocks index for the simulations, it was assumed that within group inequalities remained unchanged. The calculations of the between group components depended only on the mean income for each group and the population shares.

The Gini coefficient of real household incomes increased from the base value of 0.554 to 0.558 in both the case of fixed investment and current account deficit. The Shorrocks Index of real household income increased from the base value of .6298 to

19. For the decomposition properties of the Shorrocks index, see Shorrocks (1980).

20. For decompositions of the Shorrocks index in Thailand, see for example Jitsuchon (1987).

.6409 in the case of fixed investment, and to 64.10 in the case of fixed current account deficit. The household groups whose real incomes increased the most were precisely those whose base effective income tax rates were greater than the mean income tax rate across all households. These were the first quintile of the private non-agricultural households, the first and third quintile of the government households, and the first and second quintile of the state-enterprise households.²¹ In general, changes in income tax rates will lead to second round and further effects through the different consumption and saving patterns of households. These are very small however, because the total income tax was a small proportion of household incomes, and also because with the households divided up by quintiles, the differences in the base effective income tax rates across households were not too large. The direction of changes could however be seen. With a change to the proportionate income tax, the richer households became relatively better off. These are households with higher marginal saving rates, so that total household savings tended to increase, leading to some deflationary impact on the economy, with very slight declines in consumer prices across all sectors. The changes were very very small however, with the average consumer price index declining by only about 1/30 of one percent. Thus, the direct impact of the changes in income taxes on household incomes dominated the other indirect affects.

21. It was noted earlier that the base effective income tax rate of the second quintile of the government households was less than that for the third quintile of the government households. This was due to the household in the third quintile earning a higher proportion of income from property income compared to that in the second quintile of the government households.

5.4.2 CORPORATION TAXES

In the model, corporation taxes were paid out off non-agricultural surplus. However, not all non-agricultural surplus were liable to corporate taxation. In the base SAM, out of a gross operating surplus of 492,078 millions baht in the non-agricultural sector, the largest part was the profit of unincorporated enterprises (312,337 millions baht), corresponding to the incomes of households from non-agricultural profits. These were treated as outside the realm of corporate taxation in the model, and were paid directly to households from the non-agricultural profit before any payment of corporate income tax. Part of the surplus was also generated by state-enterprises, and some were depreciations. Profits of the corporate sector liable to corporate taxation amounted to 74,477 millions baht, and the total corporate tax collected was 19,083 millions baht or about 25.6% of the income liable to corporate tax. Part of the after tax corporate profit were paid to households as property incomes, and part were retained by the corporate sector, and used to finance private investments. The removal of the corporate income tax will therefore tend to lead to higher property incomes for households, and benefit those households earning a high proportion of incomes from property incomes.

Before removal of the corporate tax, the net operating corporate profit was 55,394 millions baht. This compared to 73,987 millions baht after removal of the tax, or a difference of 18,593 millions baht. Thus, almost the full brunt of the tax was borne by the corporate sector.

This result is not too surprising in the present general equilibrium context. Suppose for example that all the net

operating profit of the corporate sector was paid to households as property incomes, and suppose that all households get the property incomes in the same proportion to their total incomes. Then, the replacement of the corporate income tax with a proportional tax on household incomes will leave the equilibrium in the economy basically unchanged, except that in the case with no corporate tax, households will get additional property incomes equal to the amount of the original corporate tax, and the government simply taxes these additional incomes away through the proportional income tax. Because it was assumed that households get the same proportion of their incomes as property incomes, net incomes of households after paying the proportional income tax will remain unchanged. Household consumption will be unchanged. The price (gross of tax) of capital and labor will be unchanged, production will be unchanged, total taxes will be unchanged, and the equilibrium in the economy on the real side will be unchanged. The price after tax of capital in the non-agricultural sectors will however decline by an amount equal to the ratio of the corporate tax to the total surplus of the non-agricultural sectors. The corporate tax is borne entirely by corporate profit, which in this case is equivalent to property income. This is independent of the production technologies, because the gross price of capital and labor in the non-agricultural sectors remains unchanged.

In the model that was used for the simulations, households do earn different proportions of incomes from property incomes, and through their different consumption patterns, there were affects on relative prices in the new equilibrium after the replacement of the corporate income tax with the proportional tax on household incomes. However, these were fairly small, mainly because of three reasons. First,

total income from property is a fairly small proportion of total household incomes (7.2%). Second, while the proportion of total incomes that each household group gets from property incomes do vary, the differences in percentages were not dramatic. Third, the total marginal consumption was only about one quarter of total consumption, with the rest being fixed consumption according to the linear expenditure system. Because of these reasons, changes in consumption patterns arising from income redistribution as a result of the replacement of the corporate income tax with a proportional income tax will not be large, and will not lead to a result much different to the case assumed above where all households obtained the same proportion of income from property incomes. In the SAM, some of the corporate profits were also retained earnings, but these were again small when compared to GDP, so changes from the result in the last paragraph resulting from this source will also tend to be small. Therefore, in total, it should not be surprising that most of the corporate tax was borne by the corporate sector.

Another feature of the model is that capital was fixed in both agriculture and non-agriculture. As a result of the removal of the corporate income tax, the net of tax returns to capital in non-agriculture will rise, and this will lead to more differential between the returns to capital in agriculture and non-agriculture compared to the base situation. Over the long run, this will lead to more capital flowing to non-agriculture compared to agriculture. However, this should not change the conclusion that most of the corporate tax is borne by the corporate sectors. In fact, in the first analysis of tax incidence within a simple general equilibrium framework with factor mobility between the sector subjected to the corporate income tax and the sector not subjected to the tax,

Harberger (1962) showed that under very plausible conditions on the various elasticities, it is likely that the capital will bear most of corporate income tax. With capital mobility between the taxed and non-taxed sector, capital in the non-taxed sector will also bear some of the burden of the corporate income tax, due to movement of capital to equalize the after tax returns to capital in the various sectors. Since Harberger's pioneering analysis, there have been other studies, both theoretical and empirical to assess how the incidence of the corporate income tax depends on various elasticities parameters in the general equilibrium framework; see for example Atkinson and Stiglitz (1980, chapter 6) or Shoven and Wally (1972). Generally, capital in the taxed sector will bear most of the burden of the corporate tax unless the production functions have very low elasticities of substitution and the consumer demand functions are price elastic with respect to the prices of the commodities from the taxed and untaxed sector.

In the current model, the elasticities of substitution in non-agriculture does not make much different to the result. An experiment was carried out by fixing the elasticity of substitution in all non-agricultural sectors at 0.2. It was still the case that corporate profit bore almost the full brunt of the corporate income tax. This is expected from the earlier discussions showing that if all corporate profits were distributed to households so that each gets the same proportion of income from property income, then corporate profit would bear the full burden of corporate taxation irrespective of the

22. Apart from different assumptions concerning factor mobility to the current analysis, these analyses also assume that government tax revenue can change but that the government will spend additional tax revenue to keep nominal GDP constant.

production technologies, and the fact that the base SAM does not depart too much from these assumptions.²³

As corporate profit bears most of the corporate tax burden, the impact of the corporate tax on income distribution will therefore depend mostly on the pattern of property income earnings across households. Those households whose earnings have relatively high proportions of property incomes will tend to benefit more from the removal of corporate taxation compared to those households with relatively low proportions of total income from property incomes. This is shown in tables 5.20 and 5.31.

Before looking at the distributional implications however, it should be mentioned that, in the current experiment, the replacement of the corporate tax with a proportional tax on household incomes will reduce real household income in the aggregate. This is because the households have to bear the full brunt of the additional tax to replace the corporate tax, whereas the retained earnings of the private corporations also bore some burden of the original corporate taxation. The model of course ignored the fact that the increased corporate retained earnings will lead to higher valuation for firms which will generate higher income streams for the households in the future. Thus, the average decline in real household incomes should not be taken at face value. The same will be true when the simulations concerning the removal of the indirect taxes are considered. What is more important is the direction of change in income distribution.

23. The result that corporate profits bears most of the burden of the corporate income tax is in stark contrast to the assumptions used in allocating tax burden in the studies of ---

Tables 5.20 and 5.31 shows that for both of the closures used the relative change in real household incomes corresponded very closely to the percentage household earnings from property incomes. The household benefiting the most relatively was the government household in the first quintile, followed by the government household in the third quintile, and the state-enterprise household in the top quintile. These, in order, were the households with the highest ratios of property incomes in total income. The households benefiting least from the removal of the corporate income tax were the state-enterprise households in the fifth and third quintile, as these almost earned nothing from property incomes (at least according to the data used) but have to bear the additional proportional income tax to replace the corporation tax. In general, it was the better off households who earned a higher proportion of incomes from property incomes. Thus, the replacement of the corporate income tax by a proportional tax on households made income distribution worse. After removal of the corporate income tax, the Gini coefficient increased from 0.554 to 0.555 in both macroeconomic closures, and the Shorrocks index increased from .6298 to .6318 in the fixed investment case, and to .6227 in the fixed current account case.

5.4.3 BUSINESS TAXES

From the discussions concerning household consumption patterns, it appeared quite likely that business taxes would fall more heavily on the relatively better off households. Sectors with high effective business tax rates, such as Beverages and Hotels and Restaurants, are ones which form a higher proportion of the richer households total consumption than the poorer household's total consumption.

Table 5.32
Percent of Business Tax in Household Consumption

	ONLY DIRECT EFFECT	WITH CASCADING EFFECT
AGRICULTURE1	2.97%	5.24%
AGRICULTURE2	2.73%	5.08%
AGRICULTURE3	2.67%	5.06%
AGRICULTURE4	2.54%	4.93%
AGRICULTURE5	2.54%	4.97%
NON-AGRICULTURE1	2.93%	5.16%
NON-AGRICULTURE2	2.74%	5.05%
NON-AGRICULTURE3	2.66%	4.98%
NON-AGRICULTURE4	2.50%	4.87%
NON-AGRICULTURE5	2.57%	4.96%
GOVERNMENT1	2.95%	5.21%
GOVERNMENT2	2.65%	4.98%
GOVERNMENT3	2.64%	5.05%
GOVERNMENT4	2.63%	4.95%
GOVERNMENT5	2.09%	4.52%
ST. ENTERPRISE1	2.75%	5.02%
ST. ENTERPRISE2	2.38%	4.80%
ST. ENTERPRISE3	2.39%	4.63%
ST. ENTERPRISE5	2.42%	4.69%
ALL HOUSEHOLDS	2.32%	5.11%

One can estimate crudely the burden of business taxes on the households by calculating the amount of the business taxes included in the consumption bundle of each household by assuming that all business taxes are passed on to the consumers and ignore effects of taxes on factor incomes. Table 5.32 present calculations for two cases. In the first case, it is simply assumed that the business tax increases the price of the product of each sector by the tax rate observed in the base SAM for each sector. Thus, given that the business tax on the Hotel and Restaurant sector was 7.4% in the base SAM, it is assumed that one baht of household consumption of the Hotel and

Restaurant sector includes 0.074 baht of business tax, and similarly for the other sectors. With this assumption, the ratio of business tax in the total consumption expenditure of each household is given under the column labeled "direct effect only". In total, business tax make up about 2.82% of total household consumption, or about 19,100 millions baht out of the total household consumption of 677,549 millions baht. The calculation reveals clearly that within each household group the better off households bear a higher proportion of business tax in their consumption. Thus, while 2.97% of the consumption of the top quintile of agricultural households emanates from the business tax, the bottom quintile of agricultural households bears 2.54% of business tax in their consumption bundle, and a similar pattern holds true for the other household groups. Across household occupations, it appears that the farm households bear slightly more of the burden of the business tax than the other households groups, with the state-enterprise households bearing less than the other groups.

The above calculation however ignores the cascading of taxes that exists in the system due to the input-output structure of production and the *ad valorem* nature of business taxes. Suppose the business tax on sector *i* of $x\%$ increases the price of *i* by $x\%$, then because the output of sector *i* is used in the production of other sectors, this will add to the price of the other sectors. This is not the end of the story by any means. The increases in prices of the other sectors will lead to further increases in the business tax paid by the other sectors, and hence more increases in their prices. In turn, the costs of input of sector *i* will increase, leading to further increases in the price of sector *i*, both through the increases in the price of inputs, and in the additional business tax that sector *i* has to pay because the value of its

output also increases. This process continues until the effects of the additional rounds of increases become insignificant.

Table 5.33
Cascading of Business Tax

		NOMINAL RATE	WITH CASCADING
PADDY		0.60%	1.73%
OTH.MAJ	CROPS	0.50%	1.98%
VGFR		1.20%	2.20%
OTH.AGR		1.20%	3.13%
FISHING		0.60%	4.02%
SLAUGH		0.60%	4.55%
C-P FOOD		2.60%	5.93%
RICE	MILLING	2.90%	5.42%
BEVERAGE		8.40%	10.10%
TOBACCO	PROCESS	0.00%	1.15%
OTHER	FOODS	2.00%	5.02%
CLOTHING		4.30%	8.70%
W-P-T		4.60%	7.75%
BASIC	INDUST	8.90%	12.18%
APPLIAN		3.80%	6.84%
OTHER	H-H ITEM	3.40%	7.01%
OTHER	INDUST	5.70%	9.26%
FUEL		0.00%	3.65%
UTILITY		0.00%	2.88%
CONSTR		1.40%	4.74%
HOT-RES		7.40%	10.83%
TRANSP		0.70%	3.45%
REAL	ESTATE	0.70%	1.37%
PUBLIC	ADMIN	0.00%	0.00%
EDUCAT		0.00%	1.85%
HEALTH		0.10%	3.08%
OTHER	SERVICE	4.50%	6.05%
TOTAL		2.96%	5.60%

Table 5.33 gives a comparison of the nominal business tax rates in each sector with the price effect as a result of the total effect of the direct price effect and the cascading effect. In this table, the cascading impact of business taxes on the prices of the various sectors are calculated on the assumption that the output and value added at factor cost of each sector remains unchanged.²⁴ It can be seen that the cascading effect almost doubles the impact of business taxes on prices. The nominal business tax rates adds about 2.96% to the average price of products, while, with cascading, the average price increase becomes 5.6%. The impact on households for this case is given in table 5.32 under the column titled "with cascading". For the households, business taxes with cascading make up 5.1% of total household consumption, or about 34,555 millions baht. It should be noted that this is only about 59% of the total amount of business taxes. The reason for this, of course, is because household consumption is not the only source of final demand in the economy. According to the SAM, household consumption was about 52% of total final demand. Other sources of final demand are government consumption, investments, exports and the consumption of tourists.

While the magnitude of the impact of business tax on households is greater with cascading, the relative impact on different households is very similar to the case with direct impact only. Within each occupational group, it is still the

24. The calculation was done by iterating over the various rounds of declines in prices that would be brought about by a reduction of the business tax on all sectors to zero percent. This was carried out until further changes in prices become insignificant. The cascading effect is much greater than that calculated in TDRI (1987), because the latter only considered the cascading effect arising from production for final demand, and also ignored the ad valorem nature of business taxes.

case that the better off households generally bears a higher burden of the business tax. The pattern across household occupations is also similar to the case with only direct effects.

The above calculations follow the approach used in the partial analysis of tax incidence by only looking at the impact of the business tax on product prices while ignoring further general equilibrium adjustments in the economic system in response to the tendency for the removal of the business tax to lead to changes in demand and particularly in factor prices. As such they indicate the early round effects on the consumption side, and the likely impact on income distribution when viewed from the "uses" side. In the simulations using the model all the general equilibrium effects of business taxes are taken into account. As far as the total effect on the distribution of real household incomes is concerned, however, the impact is in the direction expected from the above discussions. With the replacement of the business tax by the proportional income tax, real income distribution becomes worse compared to the base case. The Gini coefficient increase from 0.554 to 0.557, and the Shorrocks index increases from .62978 to .63638, in the case of the fixed investment case. For the fixed current account case, the Gini coefficient increases to 0.558 and the Shorrocks index increases to .63907. Thus, with the business tax in place, the distribution of real income is better than replacing the tax with a proportional income tax.

There are however some differences between the result from the general equilibrium analysis and what might be suggested from the partial considerations above.

First, the cascading effect of the business tax is minimal. In fact, the decline in prices as a result of the replace of the business tax with the proportional income tax is very small. The average consumer price index declines by less than one percent. This is much less than even in the case without cascading considered above. The difference of course arises mainly from changes in factor prices, or nominal GDP at factor costs, which is also part of the output price. In the partial consideration of the effects of the business tax on prices above, it was assumed that factor prices remains the same with or without the business tax. In the simulation, total tax revenue is held constant, as is the value of government consumption, and essentially whether the tax is on the production side or on the factor side, its effect will percolate through the economic system adding the total value of output. The first round effect of the fall in product prices as a result of the removal of the business tax will be dampened as a result of increases in demand. This will lead to higher demand for the products and hence higher demand for the factor of productions, and their prices will rise. This will lead to factor costs becoming a higher proportion of total production costs, and product prices will not fall by as much as the reduction in the business tax.

Another difference from the partial consideration is that with the general equilibrium effects, agricultural households' become relatively worse off as a result of the replacement of the business tax with the proportional income tax. This is in contrast to the partial examination of the consumption pattern and the burden of the business tax on household consumption, where agricultural households appeared if anything to bear a slightly higher burden of the business tax than non-agricultural households. With the general equilibrium effects,

however, the business tax imposes more burden on the non-agricultural sectors, because most of the business tax falls on these latter sectors. And because inevitably not all the burden can be shifted to the consumers, the producers and factors of production in the non-agricultural sectors have to bear some of the burden of the business tax. Once the business tax is replaced by the proportional income tax, the non-agricultural sectors benefit more because now the burden of the business tax has been replaced by the burden from the proportional income tax which hits all households proportionately. It can be seen that increases in the prices of the non-agricultural factors of productions are greater than those for agricultural of production. The formal increase by about 6.6%, while the increases in the latter ranges between 3-3.5%. This relative change in factor prices will tend to lead to worsening inequality with the removal of the business tax. Or one can say that business taxes are progressive in their distributional impact.

As with the replacement of the corporate income tax with a proportional income tax on households, the replacement of the business tax leads to declines in real household incomes (on the order of one percent). The reason is because the business tax imposes a burden not only on household consumption, but also other sources of final demand, and household consumption is only about half of total final demand. With the replacement by a proportional tax on household incomes, however, all the burden of the compensating proportional income tax bears on the households.

25. Again this ignores increases in the valuation of firms, although it does consider the effect of larger income flows from firms to the households as a result of higher profits made by firms.

5.4.4 SALES TAXES

Sales taxes fall mainly on the Tobacco, Beverage, and the Fuel sectors. Better off households tend to have a higher ratio of fuel and beverage consumption in their total consumption than poorer households, whereas for tobacco the groups with the largest share in total consumption are households in the second or third quintile. Thus, it should not be surprising if sales tax also turn out to be progressive in nature.

One can look at the partial effect of sales taxes on prices as in the previous case of the business tax. As with the business tax, sales tax also show cascading effects. If a product with a sales tax (such as fuel) is used in the production of another of product, then the prices of the other products will tend to be higher than without the sales tax. This will lead to further increase in prices as a result of the input-output nature of production. The existing pattern of business tax will also contribute to further cascading of the sales taxes. As the sales taxes increases the prices and values of sales of various sectors through the input-output relations, the amount of business taxes paid by the various sectors will also increase (the business tax being ad valorem in nature). This will lead to further cascading in prices.

Table 5.34 shows the increases in the prices of household consumption as a result of the sales tax , and there are two cases as with the business tax; one with only direct effect of the sales tax on prices of the taxed sector, and one with the full cascading effect. Generally for both cases, one can discern a progressive pattern, although for the sales tax, the

Table 5.34
Percent of Sales Tax in Household Consumption

	ONLY DIRECT EFFECT	WITH CASCADING EFFECT
AGRICULTURE1	2.05%	3.02%
AGRICULTURE2	1.87%	2.89%
AGRICULTURE3	1.84%	2.88%
AGRICULTURE4	1.62%	2.67%
AGRICULTURE5	1.51%	2.52%
NON-AGRICULTURE1	2.52%	3.69%
NON-AGRICULTURE2	2.82%	4.00%
NON-AGRICULTURE3	2.19%	3.29%
NON-AGRICULTURE4	1.81%	2.91%
NON-AGRICULTURE5	1.73%	2.77%
GOVERNMENT1	2.37%	3.46%
GOVERNMENT2	2.72%	3.87%
GOVERNMENT3	2.43%	3.54%
GOVERNMENT4	1.49%	2.59%
GOVERNMENT5	1.28%	2.63%
ST. ENTERPRISE1	2.51%	3.76%
ST. ENTERPRISE2	2.21%	3.42%
ST. ENTERPRISE3	2.56%	3.73%
ST. ENTERPRISE5	1.90%	2.80%
ALL HOUSEHOLDS	2.26%	3.37%

second quintile group of households in the non-agricultural sector appears to be hardest hit (except for the state-enterprise households, where the third quintile is hardest hit for the no cascading case), the reason being due mostly to the high share of tobacco in the total consumption of these households relative to other households.

The general equilibrium analysis gives a similar conclusion. The relatively best off households as a result of the replacement of the sales tax by the proportional income tax are the second quintile of the private non-agricultural and government households, and the third quintile in the state-

enterprise households. Inequality in real incomes gets worse as a result of the removal of the sales tax. The Gini coefficient increases to 0.557, and the Shorrocks index increases to .637 in the case of fixed investment, and to 0.555 and .6318 respectively in the case of fixed current account.

There are also relative impact on factor prices, with the non-agricultural sector gaining more from the removal of the sales tax. Again this is because the sales tax are specific to some non-agricultural sectors, and even with full cascading, the impact is still much greater for the non-agricultural sectors, with the only agricultural sector where the cascading impact become significant being Fishing, which uses a lot of fuel.

5.4.5 IMPORT DUTIES

Imports make up a small proportion of total household consumption. Table 5.35 shows that total import was only about 7.2% of total household consumption. The pattern by households reveals that the share of imports to total consumption do not reveal any strong systematic pattern with income levels. Generally, the private non-agricultural households and the government households in the top four quintiles have a slightly higher import share in total consumption than the corresponding households in the agricultural sector and the state-enterprise sector. Within each occupational group, the agricultural and state-enterprise households have increasing import share in consumption with income levels, but this is not the case for the other two occupational groups.

Table 5.35
Share of Import in Household Consumption

HOUSEHOLDS	IMPORT SHARES (PERCENT)
AGRICULTURE1	7.01
AGRICULTURE2	6.80
AGRICULTURE3	6.72
AGRICULTURE4	6.47
AGRICULTURE5	6.36
NON-AGRICULTURE1	7.44
NON-AGRICULTURE2	7.60
NON-AGRICULTURE3	7.62
NON-AGRICULTURE4	7.17
NON-AGRICULTURE5	7.21
GOVERNMENT1	7.51
GOVERNMENT2	7.30
GOVERNMENT3	7.63
GOVERNMENT4	7.11
GOVERNMENT5	5.41
ST. ENTERPRISE1	7.30
ST. ENTERPRISE2	6.68
ST. ENTERPRISE3	6.51
ST. ENTERPRISE5	4.70
ALL HOUSEHOLDS	7.21

Because imports are a small proportion of household consumption, and the mean tax rate on total imports are about 10%, the direct impact of import taxes in raising the price of household consumption will therefore be small. Table 5.36 shows that the direct impact of import tax on household consumption cost is only on the order of 0.7%. Import taxes, like business taxes and sales taxes, also have cascading effects through raising the prices of inputs used in production. With full cascading, the impact of import taxes on household consumption rises to the order of 1.5%, or less than half of that with sales taxes.

Table 5.36
Percent of Import Tax in Household Consumption

	ONLY DIRECT EFFECT	WITH CASCADING EFFECT
AGRICULTURE1	0.75%	1.54%
AGRICULTURE2	0.77%	1.57%
AGRICULTURE3	0.80%	1.59%
AGRICULTURE4	0.77%	1.55%
AGRICULTURE5	0.79%	1.56%
NON-AGRICULTURE1	0.65%	1.44%
NON-AGRICULTURE2	0.73%	1.53%
NON-AGRICULTURE3	0.78%	1.57%
NON-AGRICULTURE4	0.79%	1.58%
NON-AGRICULTURE5	0.80%	1.56%
GOVERNMENT1	0.72%	1.55%
GOVERNMENT2	0.76%	1.56%
GOVERNMENT3	0.83%	1.61%
GOVERNMENT4	0.71%	1.46%
GOVERNMENT5	0.48%	1.31%
ST. ENTERPRISE1	0.65%	1.47%
ST. ENTERPRISE2	0.70%	1.57%
ST. ENTERPRISE3	0.62%	1.32%
ST. ENTERPRISE5	0.59%	1.17%
ALL HOUSEHOLDS	0.72%	1.51%

The impact of import taxes from the partial examination of the impact on the "uses" side in table 5.36 reveal that the middle quintile of households tend to be most affected by the import tax. This is true for the agricultural, private non-agricultural, and the government households. For the state-enterprise households, it is the second quintile that is most affected. Thus, the direct impact on the "uses" side should be fairly neutral, and the full impact of import taxes on income distribution will depend on what happens on the income generating or "sources" side of the economy.

The general equilibrium analysis of the replacement of the import tax by the proportionally income tax reveals that what happens to inequality depends on the macroeconomic closure that is used. In the case of fixed investment, inequality of real household incomes gets worse as a result of the removal of the import taxes, suggesting that the burden of import taxes are progressive in nature. On the other hand, if the closure is to maintain the current account deficit, then the reverse conclusion turns out to be true, that is the removal of import taxes makes inequality better, so that the total impact of import taxes are regressive in nature.

To understand this difference, one need to look at the changes in factor incomes as a result of the import taxes and what happens to the current account upon removal of the import taxes. Generally, import taxes imposes protection on domestic industries from foreign competition, and the non-agriculture sectors tend to benefit more than this protection than the agricultural sectors. While some agricultural products have high import duty rates, eg. about 70% for imported fruits and vegetable, because the share of imports of these products are only a small proportion of total consumption of the product group, and because imports are generally not perfect substitutes for domestic commodities (except may be for fuel), the effective protection afforded by import duties are less than otherwise (see particularly the analysis of effective protection in the presences of imperfect substitution between imported and domestic commodities in Devarajan and Sussangkarn (1987)). On average the effective protection afforded to non-agricultural sectors are larger than for agricultural sectors, and therefore the removal of import duties would tend to benefit the non-agricultural sectors more. The is borne out in the fixed investment case, where non-agricultural factor prices

increase relative to agricultural factor prices. The result is that the non-agricultural households are made better off relative to the agricultural households from the removal of the import tax. This affect from the income side contributes slightly to the overall inequality. In the fixed investment case, the Gini coefficient remains about the same with or without the import tax, while the Shorrocks index increases from 0.6298 to 0.6301. The change is however is fairly small. The reason is probably that the actual effective protection given by import taxes are not very large, and that the impact on the "uses" side tends towards neutrality.

In the fixed investment case, the removal of the import duties leads to a large increase in the current account deficit compared to the base situation. The current account deficit increases to 61,077 millions baht compared to a deficit of 49,470 millions baht in the base SAM, or an increase of about 23.5%. This is not surprising because imports become cheaper, and therefore their demand will tend to increase. Thus, the removal of import duties has an adverse impact on external stability.

In the fixed current account case, investment has to decline to keep the current account in check. Total investment declines from 233,047 millions baht in the base SAM to 206,953 millions baht, or by about 11.2%. Because investment goods are mostly non-agricultural goods, this represents a substantial

26. The general equilibrium computations of effective protection in Devarajan and Sussangkarn (1987) shows that with imperfect substitution between imported and domestic products, the effective protection of import duties are much less than the exaggerated figures yielded by most ERP studies which implicitly assume that imports and domestic products are perfect substitutes.

decline in the demand for the non-agriculture sectors. Thus, one finds that in this case, the prices of factors of production in non-agriculture decline substantially relative to the prices of factors of production in agriculture (by about 4.5%). This makes the agricultural household relatively better off and the non-agricultural households relatively worse off compared to the fixed investment case. For this case, inequality improves compared to the base SAM. The Gini coefficient declines from 0.554 to 0.550, and the Shorrocks index declines from .6298 to .6198.

As with the analyses of the other indirect taxes, real household incomes tend to decline with the replacement of the import duties with a proportional income tax on households. This is because of the narrower base of the income tax due to the fact that household consumption is only about half of the final demand in the economy. In the fixed current account case, real incomes decline by more than in the case of fixed investment, because of the multiplier effect as a result of the decline in investment necessary to keep the current account in check. However, while average real household income declines by more in the fixed current account case compared to the fixed investment case (2.8% versus 1.9%), the decline in real incomes of the agricultural households is actually less in the fixed current account case, although nominal incomes for all households decline more in this case. This is because of the large decline in the prices of non-agricultural products more than compensate for the decline in nominal incomes of the agricultural households. For the non-agricultural households, product prices may fall more in the fixed current account case, but because the products most affected are the non-agricultural products, and they derive their income from these sectors, they become worse off.

The comparison between the two closures show the importance of investment in influencing the distribution of income. Because investment goods are mostly from the industrial sectors, more investment will tend to benefit these sectors, and the factors employed in these sectors. Over the longer run, of course, factors will shift from sector to sector to take advantage of the differential earnings. In the current analysis, while factors are mobile within non-agriculture and within agriculture, they are not mobile across sectors.

5.4.6 ALL INDIRECT TAXES

In this case, all indirect taxes are removed and replaced by a proportional income tax on all households. In addition to business taxes, sales taxes and import taxes, which were already discussed, there is also a small amount of export taxes in the system. These are mostly export tax on rubber and some other items. Because of the small amount of export taxes compared to the total indirect tax, about 1.5%, the result for this case will depend mostly on the results of the previous three cases combined.

For the fixed investment case, it is not surprising to find that the total indirect tax is progressive. This is because each of the above three taxes taken in isolation were progressive. In this case, the Gini coefficient increase from 0.554 to 0.556 compared to the base SAM, and the Shorrocks index increases to .6346 from the base value of .6298. These values for the Gini and the Shorrocks index lies between the values in the case of the import duties and the business and sales taxes. Thus, the result for this case is some weighted average of the

results from the previous three cases (with the reduction of the export taxes adding some noise factor).

In the fixed current account case, the impact of the decline in investment necessary to keep the current account in check as a result of the reduction of the import duties outweighs the progressive nature of the business and sales taxes. Inequality declines with the removal of all indirect taxes. The Gini coefficient and the Shorrocks index decreases to 0.551 and .6211 respectively. Thus, it can be said that the result for this case of removing all indirect taxes depends crucially on the decline of investment necessary as a result of the removal of the import duties.

5.4.7 ALL TAXES

This final case removes all taxes in the system and replaces them with a proportional tax on household incomes. It will be a combination of the case of all indirect taxes with the cases of the corporation tax and the base income taxes on households.

With fixed investment, the total indirect taxes and each of the direct tax turn out to be progressive from the previous analysis. Thus, the combination of all the taxes are also progressive. The Gini coefficient increase from 0.554 for the base situation to 0.561, and the Shorrocks index increases from .6298 to .648. For the Gini the increase represents 1.26%, and for the Shorrocks index, 2.89%.

For the fixed current account case, there are two opposite effects, with the removal of indirect taxes leading to an improvement in inequality, while the removal of the direct

taxes leading to a deterioration. In total the effects from the direct tax side dominates, and with the removal of all taxes, the Gini coefficient becomes 0.556 (increasing by 0.36%) and the Shorrocks increases to .6352 (or by 0.43%). For this case the increases are very small, so that the tax system is basically neutral.

5.5 Conclusions

This chapter has analyzed the total incidence of the different types of taxes. The general equilibrium framework was used to simulate the effects of replacing some type of tax or taxes with a proportional tax on household incomes to generate exactly the same total tax revenue as before the change. Two different macroeconomic closures were used to see the sensitivity of the results with respect to the different closures. Apart from the impact of the import duties, and cases involving removal of the import duties, the results for the two cases are fairly similar as far as the impact of the taxes on income distribution are concerned.

The following types of taxes were shown to be clearly progressive in nature.

1. Income taxes.
2. Corporation taxes.
3. Business taxes.
4. Sales taxes.
5. The sum total of all taxes.

The only tax where the conclusion was unclear and depended on the closure used was the import duties. In the case of fixed investment, import duties were shown to be progressive. However, with fixed current account, the required reduction in investment to keep the current account in check after removal of the import duties contributed to an overall improvement in income distribution after replacement of import duties with the proportional income tax.

In general, the analyses did not find the changes in income distribution to be dramatic. Changes in the Gini coefficient were at most 0.72%, and changes in the Shorrocks index were at most 2.9%. For the indirect tax system as a whole, taking account of the relatively small changes in the inequality measures, and the different results depending on the closure of the model, one will not be far wrong in stating that the system is neutral with respect to income distribution. Income taxes are obviously progressive, and the analysis showed that corporation taxes are also progressive. Thus, one can summarize the tax system as being one with a fairly neutral indirect tax system coexisting with a progressive direct tax system.

ANNEX 1
OIL TAXES

This section will describe the oil product pricing structure as well as analyze the oil taxation process, including various kinds of taxes and the oil price stabilization fund levy. In addition, the cross-subsidization of income between different consumer groups will be analyzed, and the implications of oil taxation on income distribution will be discussed.

1. Taxes and The Oil Fund Structure

The government has imposed price controls on LPG and on nearly all oil products, except jet fuel. The existing pricing structure for controlled products allows the government to establish the ex-refinery price and the import price on a weekly basis. The government then adds taxes and the oil fund levy¹ (or in some cases a subsidy) to the ex-refinery and import price to derive the product acquisition cost to oil traders at their main installations. The controlled retail price of an oil product sold in Bangkok is the sum of the product acquisition cost and the marketing margin allowed by the government. The pricing structure can be summarized as follows.

1. See Oil Fund Levy on page 4.

Ex-refinery price (or Import price)
+ Taxes
+ Oil fund levy
+ Marketing margin
<hr/>
Bangkok controlled retail price

If the product is sold outside of Bangkok, a controlled transportation allowance is added to the Bangkok-based price to obtain the retail selling price for that particular location. This pricing structure has been in use since 1980.

Ex-refinery prices and import prices are set weekly by the government. However, controlled retail prices are fixed for an extended period of time; thus the government must use taxes and the oil fund levy as balancing factors. The setting of taxes and the imposition of the levy are influenced by political factors, however, resulting in an imbalanced domestic oil consumption pattern. Oil tax and oil fund policies have also had some effect on the distribution of income among various groups of consumers.

1.1 Oil Taxes

At present, the government imposes three kinds of oil taxes: an excise tax, an import tax, and a municipal tax. The amount of these taxes is shown in Table A.1.

o The oil excise tax. The oil excise tax has been a major source of government revenue and has accounted for over 99% of the government's total oil tax revenue. The excise tax

rate for a particular oil product is the same whether it is refined domestically or imported. In 1988, the government collected 4.40 Baht/litre tax from gasoline, 2.50 Baht/litre from diesel, 0.2 Baht/litre from fuel oil, and 2.5 Baht/kg from LPG.

The excise tax schedule is based on a dual-rate structure. In order to ensure that the government collects the minimum tax revenue, a specific tax rate was established for each oil product. According to Table A.3, the tax rate for gasoline is 4.40 Baht/litre while the rates for diesel, fuel oil, and LPG are 2.50, 0.20 and 1.36 Baht/litre, respectively.

Furthermore, the government also announced an advalorem tax rate (as a percentage of the retail price) for each of the above oil products in order to let the tax rate fluctuate with the oil price and to stimulate energy conservation (in the case of a higher oil price). The effective tax rate is the one that has the higher value. For example, the specific tax rate for gasoline was 4.40 Baht/litre, whereas the advalorem rate (38% of the retail price) was 3.38 Baht/litre in September 1988. The effective tax rate was thus 4.40 Baht/litre for gasoline.

o **The Import tax.** In addition to the excise tax, the government also collects an import tax for products shipped in from abroad. Currently, the tax rate is 0.01 Baht/litre for gasoline, diesel, and kerosene. For fuel oil, the rate is 0.001 Baht/litre. For LPG and bitumen, the rates are also 0.001 Baht/kg. and 0.01 Baht/kg, respectively.

o **The Municipal tax.** The government also collects a relatively small municipal tax. The current rate is 1% of the

effective excise tax rate for gasoline, diesel, kerosene, fuel oil, LPG, and bitumen.

1.2 The Oil Fund Levy

In addition to these taxes, the government also imposes an oil fund levy on most oil products. The levy can be considered a form of positive tax (when levied) or negative tax (when given away as a subsidy). The oil fund levy (as well as the tax) is imposed on consumers as it is included in the retail price (see Tables A.1 and A.2). The main objective of the oil fund is to stabilize retail oil prices by collecting the levy when world oil prices are soft. When the world price strengthens, the government then uses the oil fund proceeds to stabilize domestic oil prices. This is accomplished by subsidizing oil companies so they can sell a particular oil product at a lower price than the companies' acquisition cost.

Unlike taxes, however, the government has not set a specific rate for the oil fund levy (or subsidy). In practice, the amount of the levy collected equals the difference between the retail price of a product and its acquisition cost (ex-refinery/import price plus tax) plus marketing margin (see Tables A.1 and A.2). For example, in September 1988, the retail price of premium gasoline was 8.9 Baht/litre, whereas its product acquisition cost plus margin was 8.6215 Baht/litre. Thus the collected difference (of 0.2785 Baht/litre) was the oil fund levy. If, however, the difference is negative (as in the case of high speed diesel) the government pays a subsidy to the oil company instead.

In the short run, the amount of the levy/subsidy fluctuates weekly in accordance with weekly ex-refinery and

import prices.² There have been times when most products were levied (as in 1986) and times when most products were subsidized (as in 1987). This depends mainly on the level of ex-refinery and import prices at that particular time. However, in the long run, the amount of the levy/subsidy depends not only on these prices but also on the levels, marketing margin, and controlled retail prices. In other words, the government can manipulate each oil price component value to suit the economic and political situation of a particular time.

1.3 The Development of Oil Taxation

When the first major refinery came on stream in 1964, the government, for the first time³, imposed taxes on oil products produced locally. There were three types of taxes. First, the government collected an excise tax which was 0.80 Baht/litre for gasoline, 0.33 Baht/litre for kerosene, 0.12 Baht/litre for diesel and fuel oil, and 0.440 Baht/kg for LPG. Second, the government imposed a business tax which was equal to 5% of the retail price. Finally, the government collected a municipal tax which was equal to 10% of the business tax revenue. The taxes made up 43.6% of the retail price for gasoline, 17.74% of the retail price for high speed diesel (HSD) and 30.1% of the retail price kerosene (based on estimated retail prices of 2.10 Baht/litre, 0.98 Baht/litre, and 1.34 Baht/litre for gasoline, HSD and kerosene, respectively. (see Table A.4). It is clear

2. This is because the taxes and the marketing margins are normally held constant for an extended period of time.

3. Before 1964, the country imported all of its oil products (except for those produced at the Fang refinery for military use).

from Table A.4 that, since 1964, the government has imposed relatively high taxes on gasoline compared to those imposed on other products. This was probably due to the belief that gasoline consumers were well-to-do economically and could shoulder a higher tax burden compared to consumers of diesel and kerosene. Until recently, the policy to place relatively high taxes on gasoline adopted by successive governments resulted in a wide gap between the price of gasoline and its substitute, high speed diesel (HSD). A brief historical account of the development of oil taxation follows.

1.4 A Brief History of Oil Taxation

During the second oil crisis that began in 1979, the country was heavily dependent on imported energy, about 90% of its commercial energy requirement being shipped in from abroad (mostly in the form of crude and oil products). Thus, the rapidly rising world oil price had an immediate and severe impact on the country's economy and the government was under great pressure to adopt policy measures to deal with the oil crisis; however, it was caught in the dilemma of having to go in one of two conflicting policy directions.

1. To increase the domestic oil price in order to promote energy conservation and thus reduce the outflow of foreign exchange reserve.

2. To maintain a low domestic oil price in order to protect the country's economy and the government's political stability in the face of an increasing world oil price.

In 1979 and early 1980, the government finally decided to adopt the first measure by raising domestic oil prices across the board three times. The price of gasoline was increased by a total of 57%, whereas the price of HSD was raised by 85%. The adjustment of the latter was partly the result of the government's raising taxes on HSD from 9% to 15%. Taxes on LPG were imposed for the first time and the tax on kerosene was also raised. Furthermore, when the price of HSD went up faster than that of gasoline, the price gap between gasoline and HSD narrowed to 2.96 Baht/litre. However, the government continued to maintain its policy of imposing a relatively high tax on gasoline and virtually no tax on fuel oil (in order to protect the power and the manufacturing industries).

When the new government took office in 1980, there was political pressure to stabilize the domestic oil price in order to protect consumers from the adverse effects of high world oil prices. The major policy measures adopted by the new government to stabilize the oil price were as follows.

- o The government established the oil price stabilizing fund (or the oil fund) in order to use proceeds to subsidize oil prices. The main objective of the oil fund was thus to stabilize oil prices.

- o The government began to segregate oil consumers into three groups. First, gasoline consumers were perceived to have relatively higher incomes and thus, it was thought, should be able to shoulder higher price adjustments. Second, consumers of diesel, kerosene, and cooking LPG should be subsidized since high oil prices would have a severe economic impact on them. Third, industrial consumers of fuel oil should continue to be protected since a high fuel oil price would affect the price of

electricity and the competitiveness of our manufactured exports.

o The government sacrificed its oil revenue by reducing taxes across the board and abolishing taxes on LPG. This was to help soften the impact of world price increases:

Thus, the price of gasoline increased at a much faster rate than did other oil prices. Gasoline consumers had to pay an increasingly higher amount of the oil fund levy which rose from 0.04 Baht/litre in 1980 to 2.19 Baht/litre in 1982. Proceeds from the gasoline levy were used to subsidize users of other oil products.⁴ As a result, the price gap between gasoline and HSD (and LPG) widened to over 6 Baht/litre in 1982. There was also a wide gap between the price of HSD and kerosene. Price differentials among substitute fuels later led to severe problems of consumption distortion and oil product adulteration.⁵ From 1983-1985, there were no major changes in oil pricing and taxation policies except for some minor adjustments in retail prices and taxes. This was a period in which the government built up the oil fund which had gone into a staggering deficit of 4 billion baht in 1982. However, the government began to realize the problems of consumption distortion resulting from poor past pricing and taxation policies. When the world oil price collapsed in 1986, the government took this opportunity to correct these distorted pricing and taxation structures. This was done simply by

4. However, it was probably not government policy to use the tax and the oil fund levy on gasoline as a means for distributing income.

5. For further details, see Amranand P., T. Chongpeerapien (Forthcoming).

allowing the gasoline price to fall at a much faster rate than that of diesel. In addition, the government also increased taxes on HSD to 36%, kerosene to 26%, fuel oil to 16%, and LPG to 26%--of their retail prices. It was government policy to try to equalize the prices of and taxes on substitute oil products.

From 1987 to the present, the government has continued to work toward the goal of restructuring oil product prices and taxes. Tax rates for the two grades of gasoline are now equalized. This is also true for all grades of fuel oil, and for HSD and kerosene. Also, to eliminate the problem of LPG decanting, the prices for automotive and cooking LPG were equalized.

2. The Cross-Subsidization of Income Between Different Groups of Consumers

It is clear from the pricing and the tax structure analysis above that consumers of gasoline have been the major contributors to the oil fund reserve and government oil tax revenue. Table A.5 shows that the tax revenue from gasoline sales has been in the range of 8-11 billion baht per year since 1980 and the total tax revenue from the product during the period is estimated at 85 billion baht.⁶

6. These are estimated figures (based on an annual average of tax and oil fund levy)

Furthermore, gasoline has been the net contributor to the oil fund reserve each year (except 1987) since 1980. The amount of its oil fund contribution rose from about 110 million baht in 1980 to over 3.2 billion baht at the height of the oil crisis in 1982. This amount of money was obviously used to subsidize consumers of the other products in order to keep the prices of these products artificially low. However, gasoline's annual oil fund contribution later declined when the government adjusted its price downward after the oil crisis.

Consumers of high speed diesel paid 70 billion baht in taxes from 1980-1988. They also paid 5.9 billion baht of the oil fund levy and collected 6.7 billion baht in subsidies during the period. Thus, HSD consumers received a net subsidy of only 860 million baht from the oil fund scheme. Therefore, HSD consumers have not significantly benefited financially from the oil fund scheme if we evaluate the subsidization figures over a longer period of time. However, what consumers actually gained was relative HSD price stability during the period.

On the other hand, consumers of kerosene have enjoyed significant financial benefits from the scheme. The consumers were subsidized by the oil fund almost throughout the period; they collected about 1.7 billion baht of net subsidy and paid a relatively small amount of tax.

Consumers of fuel oil have also benefited from the past pricing structure. From 1980-1985, consumers of fuel oil paid only about 2-4 million baht in taxes annually. On the other hand, they received about 2 billion baht in subsidies during the period. However, the government later increased the tax rate on fuel oil and total tax payments by fuel oil consumers

during 1980-1988 amount to about 2.3 billion baht. The amount is relatively small compared to that of gasoline.

From Table A.4, it is clear that gasoline consumers are the net contributors the oil fund reserve, whereas consumers of most other oil products are net receivers of oil fund subsidies.⁷

3. Implications of the Oil Tax and the Oil Fund Levy for Income

Distribution

The above section describes gasoline consumers as the net contributors to the oil fund reserve. However, it is also interesting to see how gasoline and other fuels are being used and by whom. What we were particularly interested in was to see how these fuels are being consumed by the household sector. Our analysis follows, along with some observations about the implications of oil taxes and the oil fund levy for the distribution of income.

At present, premium gasoline is being used mainly by private passenger cars. Since 80% of the private passenger cars in Thailand are in the Bangkok area, most premium gasoline sales are concentrated in the capital city. On the other hand, regular gasoline is mainly used by motorcycles⁸ and the number

7. LPG consumers are also net receivers of the oil fund. However, we are unable to calculate the amount of LPG subsidy due to the lack of data on LPG consumption by type of use.

8. Information obtained from oil company interviews.

of motorcycles in the country has grown very rapidly in recent years. The total number of motorcycles is now about 2.4 million, 75% of which are found up-country.

HSD fuel is used mainly by the transport sector. Large consumers are heavy trucks, buses, fishing fleets, and pick-up trucks. LPG is used for residential cooking, automotive, and some industrial uses. Kerosene is consumed for lighting and industrial applications. Fuel oil is used entirely for industrial applications.

3.1 Household Energy Consumption Patterns

Table A.6 reveals household energy consumption patterns by income group for each of the major regions of the country. It is apparent that charcoal and fuelwood are still very important sources of household energy, particularly for those who live in rural areas. It is interesting to note that the fuel consumption per capita (per month) is higher for lower income groups than for higher income groups.⁹ This is to say that poorer families still rely mainly on traditional fuels for cooking.

Cooking LPG is used by various income groups in the Bangkok area. However, the use of cooking LPG in rural areas is limited to the high income group. This is to be expected, however, since the price of cooking LPG and LPG equipment is still relatively high compared to that used with traditional

9. High income group here is defined as those who are in the top quintile of income per capita ranking.

fuels. Furthermore, in rural areas the availability of cooking LPG is still quite limited.

Premium gasoline is used mainly by high income consumers in Bangkok and elsewhere. However, regular gasoline is consumed not only by high income consumers, but also by lower income consumers (especially in rural areas) as well. The use of motorcycles is now fairly widespread throughout the country. In fact, motorcycles have become an important mode of transportation in up-country regions.

Household consumption of HSD is relatively small compared to the consumption of other types of fuel. In Bangkok, household use of HSD is limited to high-income earners (who probably own pick-up trucks). In rural areas the household use of HSD is more spread between different income groups. However, the level of consumption seems to vary directly with the level of income.

Consumption of kerosene follows the same pattern as fuelwood: the level of consumption varies inversely with income. Households in Bangkok consume very little kerosene, whereas households in up-country regions consume significantly larger amounts of the fuel. Lower income families spend relatively more on kerosene than do higher income families. This consumption pattern is to be expected, however.

3.2 Income Distribution

On the basis of the household energy consumption patterns discussed above, we can make some observations about the implications of taxes and the oil fund levy for income

distribution.¹⁰ First, it is correct to say that premium gasoline consumers, in comparison to consumers of other fuels, are well-to-do economically. Thus, the policy to impose high taxes and the oil fund levy on premium gasoline results in the distribution of income to the other lower income groups. Second, it is incorrect to say that regular gasoline consumers have high incomes since the fuel is consumed by lower income consumers as well. According to Table A.5, regular gasoline consumers have not received any benefit from the tax or the oil fund structure. On the contrary, they have contributed as much as 6.4 billion baht to the oil fund reserve and 54 billion baht in taxes since 1980.

Third, HSD consumers are the net receivers of the oil fund. However, household HSD consumption is relatively small compared

to the consumption of other fuels. Thus, many of the benefit of the oil fund have gone to non-household consumers (like the trucking and fishing businesses). Furthermore, households use of HSD is not spread through all income classes as is regular gasoline. This is simply because HSD consumption in households is mainly for pick-up trucks and they are probably owned by higher income families. The rest is used by small farm machinery in rural areas; however, HSD consumption by farm machinery is still relatively small.

Fourth, kerosene consumers have enjoyed the oil fund subsidy. However, household consumption of kerosene is

10. Direct income distribution from the oil fund only. There may also be an indirect income distribution effect if the government spends the tax revenue (or perhaps the oil fund proceeds) on rural development. (See also footnote on page 8).

declining mainly because of the availability of electricity in most regions of the country.

Finally, Bangkok consumers of cooking LPG have also enjoyed the oil fund subsidy. As discussed earlier, consumption of cooking LPG has not spread to lower income groups, especially in rural areas. However, it is likely that the government will continue to subsidize the cooking LPG price since the future use of LPG in rural areas may help alleviate the problem of deforestation.

It can be concluded that government oil tax and oil fund policies may be effective in stabilizing oil product prices (which is the prime objective of the oil fund policy). However, the implicit government policy to let gasoline consumers shoulder a higher tax and oil fund levy than consumers of other fuels may have some adverse effects on income distribution. Gasoline, particularly the regular grade, is one of the fuels most heavily used by lower income groups. For example, in 1986, the Southern family (of about five) in the lowest income quintile spent 31 baht/month on regular gasoline, 12.5 baht/month on kerosene and very little on other modern fuels. However, as a result of the high tax and oil fund levy on regular gasoline, the above family had to pay 15 baht/month in taxes and 1.1 baht/month to the oil fund. In addition, the family had to pay 0.6 baht/month to the oil fund on kerosene.¹¹ In total, the family paid 40% and 2.8% of its total modern fuel

11. The year 1986, where the Socio-Economic Survey took place, was the only year that most oil products (except cooking LPG) were levied. This was because of government policy to narrow the price gaps between fuels that are substitutes when world oil price collapsed. During 1980 to 1985, many oil products, except gasoline, were subsidized.

expenses in taxes and to the oil fund, respectively, while receiving virtually no benefit from the oil fund subsidy. Families at the same income level in other regions also experienced the same conditions. They were thus net contributors to the oil fund.

In 1986, some of the proceeds from the oil fund levy on regular gasoline and other fuels were used to subsidize the price of cooking LPG. The rest of the proceeds went to the oil fund reserve. Since lower income families used a relatively small amount of cooking LPG, they did not benefit from the oil fund scheme. Thus the product that lower income households used most was heavily taxed and levied while the product that they consumed least was subsidized. This was also true for the period before 1986 when most products, except gasoline, were subsidized. It was the group of non-household consumers who actually gained from HSD and fuel oil subsidies. There were large users like truck and fishing fleets, and industrial consumers. The subsidies, as mentioned earlier, came significantly from the oil fund levy on gasoline.

If the government were to consider income distribution as part of its tax and oil fund policies, then perhaps the tax and oil fund structure of regular gasoline should be reexamined.¹²

12. Should this reexamination reveal that change in the tax on regular and premium gasoline would cause a distortion in the pricing structure and lead to inefficiency in gasoline consumption, one of the solutions might be to maintain the existing tax/oil fund structure on gasoline and use the proceeds for development projects (like rural road construction) that would directly benefit low income consumers.

TABLE A.1
OIL PRICE STRUCTURE OF LOCALLY REFINED PRODUCTS
JAN-SEP 1988 (AVERAGE)

UNIT : BAHT/LITRE

PRODUCT	EX- REFINERY	EXCISE TAX	MUNICIPAL TAX	TOTAL TAXES	OIL FUND	MARKETING MARGIN	BANGKOK RETAIL PRICE
PRE-GAS	3.5555	4.4000	0.0440	4.4440	0.2785	0.6220	8.90
REG-GAS	3.0255	4.4000	0.0440	4.4440	0.1496	0.5809	8.20
KEROSENE	3.4064	2.5000	0.0250	2.5250	(0.2078)	0.3964	6.12
H-DIESEL	3.3019	2.5000	0.0250	2.5250	(0.0127)	0.4858	6.30
L-DIESEL	3.1434	2.5000	0.0250	2.5250	0.1476	0.2940	6.10
FUEL OIL 1500	2.1514	0.2000	0.0020	0.2020	0.4710	0.1756	3.00
LPG-LARGE (B/KG)	5.5780	2.4752	0.0248	2.5000	(0.5846)	2.3566	9.85
LPG-SMALL (B/KG)	5.5780	2.4752	0.0248	2.5000	(0.5846)	2.3566	9.85
LPG-AUTO (B/KG)	5.5780	2.4752	0.0248	2.5000	1.3592	1.0628	10.50
BITUMEN (B/KG)	2.1433	0.2538	0.0025	0.2563	2.3161	0.3595	5.08

NOTE : VALUES IN PARENTHESES ARE SUBSIDIES.

SOURCE : VARIOUS GOVERNMENT ANNOUNCEMENTS.

TABLE A.2
OIL PRICE STRUCTURE OF IMPORTED REFINED PRODUCTS
JAN-SEP 1988 (AVERAGE)

UNIT : BAHT/LITRE

	IMPORT PRICE	EXCISE TAX	IMPORT TAX	MUNICIPAL TAX	TOTAL TAXES	OIL FUND	MARKETING MARGIN	BANGKOK RETAIL PRICE
PRE-GAS	3.2723	4.4000	0.0100	0.0440	4.4540	0.5517	0.6220	8.90
REG-GAS	2.7429	4.4000	0.0100	0.0440	4.4540	0.4222	0.5809	8.20
KEROSENE	3.2664	2.5000	0.0100	0.0250	2.5350	(0.0778)	0.3964	6.12
H-DIESEL	3.0916	2.5000	0.0100	0.0250	2.5350	0.1876	0.4858	6.30
L-DIESEL	3.0069	2.5000	0.0100	0.0250	2.5350	0.2741	0.2840	6.10
FUEL OIL 1500	1.9428	0.2000	0.0010	0.0020	0.2030	0.6786	0.1756	3.00
LPG-LARGE (B/KG)	4.3622	2.4752	0.0010	0.0248	2.5010	0.6302	2.3566	9.85
LPG-SMALL (B/KG)	4.3622	2.4752	0.0010	0.0248	2.5010	0.6302	2.3566	9.85
LPG-AUTO (B/KG)	4.3622	2.4752	0.0010	0.0248	2.5010	2.5740	1.0628	10.50
BITUMEN (B/KG)	2.1433	0.2538	0.0100	0.0025	0.2663	2.3061	0.3595	5.08

NOTE : VALUES IN PARENTHESES ARE SUBSIDIES.

SOURCE : VARIOUS GOVERNMENT ANNOUNCEMENTS.

TABLE A.3
OIL PRODUCT EXCISE TAX RATE
(SEPTEMBER 1988)

PRODUCT *	TAX RATE	
	SPECIFIC RATE (BAHT/LITRE)	ADVALOREM TAX (%)
GASOLINE	4.40	38
KEROSENE	2.50	30
DIESEL	2.50	30
FUEL OIL	0.20	1
LPG	1.36	12

NOTE : * OR OTHER SIMILAR PRODUCTS.
SOURCE : ROYAL GAZETTE. (AUGUST 11, 1986)

TABLE A.4
TAXES AS PERCENTAGE OF RETAIL PRICE
(%)

YEAR	PREMIUM HIGH SPEED GASOLINE DIESEL	KEROSENE	FUEL OIL 1500	LPG 50 KG CYLINDER
1964	43.60	17.74	30.13	-
:				
:				
1975	29.77	13.73	11.26	0.07
1976	29.77	13.73	11.26	0.07
1977	31.93	11.49	10.96	0.06
1978	39.08	9.22	9.16	0.06
1979	41.29	12.67	12.44	0.04
1980	41.41	15.15	8.57	0.03
1981	34.47	13.52	6.49	0.02
1982	34.14	13.43	6.46	0.02
1983	36.41	13.57	7.20	0.02
1984	42.42	15.15	15.15	0.02
1985	42.42	15.15	15.15	0.02
1986	46.05	35.69	26.37	10.48
1987	49.93	44.47	36.24	15.56
1988(NOV 25)	50.20	43.88	43.73	24.38

NOTE : TAXES INCLUDE EXCISE, BUSINESS AND MUNICIPAL TAXES.
ANNUAL AVERAGE EXCEPT 1988.

SOURCE : NATIONAL ENERGY ADMINISTRATION.

TABLE A.5
TAX AND OIL FUND LEVIES BY TYPE OF PRODUCT (EX-REFINERY + IMPORT)
(UNIT : MILLION BAHT)

YEAR	PRODUCT	OIL FUND	SUBSIDY	NET OILFUND	TAX REV.	TOTAL
1980	PRE-GAS	64.68	0.00	64.68	4,760.39	4,825.07
	REG-GAS	57.18	(10.41)	46.77	3,894.21	3,940.98
	KEROSENE	0.00	(127.73)	(127.73)	140.92	13.19
	H-DIESEL	342.71	(445.83)	(103.11)	4,080.98	3,877.87
	L-DIESEL	14.50	0.00	14.50	101.55	116.04
	FUEL OIL	359.15	(114.82)	244.34	4.10	248.44
	1981	PRE-GAS	1,376.46	0.00	1,376.46	4,467.79
REG-GAS		1,220.63	0.00	1,220.63	3,883.81	5,104.44
KEROSENE		0.00	(420.22)	(420.22)	160.42	(259.80)
H-DIESEL		0.00	(521.40)	(521.40)	3,825.27	3,303.87
L-DIESEL		0.00	(5.46)	(5.46)	70.77	65.31
FUEL OIL		0.00	(968.36)	(968.36)	3.68	(964.68)
1982		PRE-GAS	1,495.72	0.00	1,495.72	3,141.88
	REG-GAS	1,724.00	0.00	1,724.00	5,007.93	6,731.93
	KEROSENE	0.00	(524.31)	(524.31)	169.70	(354.61)
	H-DIESEL	0.00	(1,170.63)	(1,170.63)	3,933.92	2,763.29
	L-DIESEL	0.00	(16.76)	(16.76)	62.86	46.10
	FUEL OIL	240.47	(8.79)	231.68	2.93	234.61
	1983	PRE-GAS	1,510.58	0.00	1,510.58	3,463.20
REG-GAS		2,058.32	0.00	2,058.32	5,471.84	7,530.16
KEROSENE		0.00	(266.13)	(266.13)	247.74	(18.39)
H-DIESEL		1,157.38	0.00	1,157.38	4,015.13	5,172.52
L-DIESEL		22.93	0.00	22.93	78.09	101.02
FUEL OIL		462.29	0.00	462.29	3.45	465.74
1984		PRE-GAS	565.20	0.00	565.20	4,176.72
	REG-GAS	848.71	0.00	848.71	5,609.14	6,457.85
	KEROSENE	0.00	(138.02)	(138.02)	247.34	109.32
	H-DIESEL	1,127.49	0.00	1,127.49	5,184.38	6,311.87
	L-DIESEL	20.78	0.00	20.78	89.90	110.69
	FUEL OIL	0.00	(405.87)	(405.87)	3.33	(402.54)
	1985	PRE-GAS	28.43	0.00	28.43	4,161.98
REG-GAS		130.08	0.00	130.08	5,629.10	5,759.18
KEROSENE		0.00	(200.00)	(200.00)	174.60	(25.40)
H-DIESEL		0.00	(1,296.88)	(1,296.88)	5,519.88	4,223.01
L-DIESEL		0.00	(14.51)	(14.51)	88.85	74.34
FUEL OIL		0.00	(1,604.82)	(1,604.82)	2.64	(1,602.18)

TABLE A.5 (CONTINUED)
 TAX AND OIL FUND LEVIES BY TYPE OF PRODUCT (EX-REFINERY + IMPORT)
 (UNIT : MILLION BART)

YEAR	PRODUCT	OIL FUND	SUBSIDY	NET OILFUND	TAX REV.	TOTAL
1986	PRE-GAS	388.52	0.00	388.52	4,119.16	4,507.69
	REG-GAS	420.96	0.00	420.96	5,835.24	6,256.19
	KEROSENE	37.52	0.00	37.52	209.99	247.52
	H-DIESEL	2,748.12	0.00	2,748.12	13,259.32	16,007.44
	L-DIESEL	34.68	0.00	34.68	184.24	218.92
	FUEL OIL	735.15	0.00	735.15	772.08	1,507.23
1987	PRE-GAS	3.15	(38.79)	(35.64)	5,000.09	4,964.44
	REG-GAS	0.00	(212.86)	(212.86)	6,700.41	6,487.75
	KEROSENE	0.00	(19.13)	(19.13)	295.54	276.41
	H-DIESEL	0.00	(3,280.54)	(3,280.54)	17,738.50	14,457.96
	L-DIESEL	0.00	(41.32)	(41.32)	265.71	224.39
	FUEL OIL	0.00	(1,192.39)	(1,192.39)	1,125.86	(68.53)
1988 (JAN-SEP)	PRE-GAS	287.13	0.00	287.13	4,237.71	4,524.84
	REG-GAS	226.27	0.00	226.27	5,492.64	5,718.90
	KEROSENE	0.00	(19.52)	(19.52)	237.18	217.67
	H-DIESEL	514.32	(33.86)	480.46	13,662.23	14,142.69
	L-DIESEL	10.06	0.00	10.06	172.11	182.17
	FUEL OIL	1,004.37	0.00	1,004.37	412.39	1,416.77
TOTAL (1980-1988)	PRE-GAS	5,719.88	(38.79)	5,681.09	37,528.93	43,210.02
	REG-GAS	6,686.15	(223.07)	6,463.08	47,524.31	53,987.40
	KEROSENE	37.52	(1,715.05)	(1,677.53)	1,883.44	205.91
	H-DIESEL	5,890.02	(6,749.14)	(859.12)	71,219.61	70,360.50
	L-DIESEL	102.94	(78.04)	24.90	1,114.07	1,138.97
	FUEL OIL	2,801.44	(4,295.04)	(1,493.60)	2,330.48	836.87

NOTE : TDRI ESTIMATE.

Table A.6

Household Energy Consumption

Region	Income Class	Regular Gasoline		Premium Gasoline		High Speed Diesel		Low Speed Diesel	
		Volume	Value	Volume	Value	Volume	Value	Volume	Value
North	Top Quintile	12.6	120.0	4.1	42.7	6.6	46.5	0.1	0.6
	Second Quintile	7.4	72.5	0.5	4.7	1.3	9.6	0.0	0.0
	Third Quintile	3.4	31.9	0.3	3.2	0.6	4.4	0.1	0.9
	Fourth Quintile	1.9	18.9	0.1	1.6	0.6	4.4	0.0	0.0
	Low Quintile	1.5	15.5	0.0	0.2	0.5	3.1	0.0	0.0
Northeast	Top Quintile	16.2	155.7	1.9	18.6	4.6	33.3	0.7	4.5
	Second Quintile	5.1	51.4	0.1	1.2	2.1	15.1	0.1	0.7
	Third Quintile	2.3	22.2	0.0	0.0	1.1	7.6	0.0	0.0
	Fourth Quintile	1.1	11.2	0.0	0.0	0.3	2.4	0.0	0.1
	Low Quintile	0.4	4.5	0.0	0.1	0.2	1.1	0.1	0.9
Central	Top Quintile	14.0	128.3	3.4	33.2	5.3	35.8	0.1	0.5
	Second Quintile	9.9	91.5	0.4	3.6	1.3	9.0	0.0	0.1
	Third Quintile	3.6	34.4	0.0	0.4	1.6	10.5	0.0	0.0
	Fourth Quintile	3.4	32.9	0.1	1.1	0.0	0.1	0.0	0.0
	Low Quintile	4.7	45.7	0.0	0.0	0.2	1.7	0.0	0.0
South	Top Quintile	15.7	152.0	4.6	46.8	0.8	5.5	0.0	0.0
	Second Quintile	9.4	91.6	0.2	2.1	0.2	1.4	0.0	0.0
	Third Quintile	6.7	65.1	0.0	0.0	0.0	0.0	0.0	0.0
	Fourth Quintile	5.2	50.4	0.0	0.0	0.0	0.0	0.1	0.5
	Low Quintile	3.3	31.3	0.0	0.0	0.0	0.0	0.0	0.1
Bangkok									
- City Core	Top Quintile	8.9	82.0	21.7	209.6	1.8	11.6	0.0	0.0
	Second Quintile	3.2	27.7	1.0	8.8	1.2	7.4	0.0	0.0
	Third Quintile	0.7	5.8	0.0	0.0	0.0	0.0	0.0	0.0
	Fourth Quintile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Low Quintile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- Suburbs	Top Quintile	6.8	64.6	25.0	246.2	1.9	12.3	0.0	0.0
	Second Quintile	10.8	104.8	0.0	0.0	0.0	0.0	0.0	0.0
	Third Quintile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Fourth Quintile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Low Quintile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- Fringe Area	Top Quintile	7.3	68.4	7.7	78.0	2.0	13.8	0.0	0.0
	Second Quintile	4.6	42.3	0.0	0.5	4.9	33.3	0.4	2.4
	Third Quintile	4.5	39.9	0.0	0.0	0.0	0.0	0.0	0.0
	Fourth Quintile	1.7	15.5	0.0	0.0	3.2	21.1	0.0	0.0
	Low Quintile	4.0	41.8	0.0	0.0	0.0	0.0	0.0	0.0

Note: Unit = Litres

* Kilograms

** Unit (Kwh)

Source: Socio-Economic Survey, 1986.

Table A.6 (continued)

Household Energy Consumption

Region	Income Class	Lubricating Oil		Kerosene		LPG cooking *		LPG vehicles		
		Volume	Value	Volume	Value	Volume	Value	Volume	Value	
North	Top Quintile	0.7	24.5	0.4	3.0	3.1	32.9	0.1	0.9	
	Second Quintile	0.2	7.1	0.8	7.2	0.4	3.9	0.0	0.0	
	Third Quintile	0.1	3.1	0.8	7.0	0.1	1.2	0.0	0.0	
	Fourth Quintile	0.1	2.4	0.8	6.7	0.1	1.1	0.0	0.0	
	Low Quintile	0.1	1.3	1.0	9.1	0.0	0.2	0.0	0.3	
Northeast	Top Quintile	0.7	22.4	0.3	2.7	2.3	22.6	0.0	0.0	
	Second Quintile	0.2	6.2	0.7	6.3	0.1	1.6	0.0	0.0	
	Third Quintile	0.1	4.2	1.0	9.8	0.2	1.6	0.0	0.0	
	Fourth Quintile	0.1	1.5	1.1	10.6	0.0	0.1	0.0	0.0	
	Low Quintile	0.1	1.4	1.3	11.9	0.0	0.3	0.0	0.0	
Central	Top Quintile	0.5	12.6	0.3	2.1	6.1	55.3	1.4	9.0	
	Second Quintile	0.4	11.3	0.7	6.3	2.9	27.3	0.0	0.0	
	Third Quintile	0.1	1.5	1.3	9.6	1.0	9.8	0.0	0.0	
	Fourth Quintile	0.1	2.0	1.1	9.8	0.6	6.0	0.0	0.0	
	Low Quintile	0.1	3.1	1.2	10.6	0.8	8.8	0.0	0.0	
South	Top Quintile	0.6	14.6	0.6	5.9	4.1	45.8	0.0	0.0	
	Second Quintile	0.3	9.3	1.2	12.5	1.5	18.4	0.0	0.0	
	Third Quintile	0.2	5.2	1.3	12.2	0.6	6.9	0.0	0.0	
	Fourth Quintile	0.1	2.3	1.6	15.5	0.3	3.2	0.0	0.0	
	Low Quintile	0.1	2.8	1.4	12.5	0.2	2.9	0.0	0.0	
Bangkok	- City Core	Top Quintile	0.2	8.1	0.0	0.2	6.2	61.0	0.9	6.6
		Second Quintile	0.0	1.5	0.0	0.0	4.4	43.4	0.0	0.0
		Third Quintile	0.0	0.0	0.1	0.7	2.1	20.3	0.0	0.0
		Fourth Quintile	0.0	0.0	0.0	0.0	0.3	3.4	0.0	0.0
		Low Quintile	0.0	0.0	0.0	0.0	2.3	23.0	0.0	0.0
	- Suburbs	Top Quintile	0.3	10.3	0.0	0.2	8.0	77.7	1.0	7.5
		Second Quintile	0.0	1.5	0.1	1.1	4.3	40.3	0.0	0.0
		Third Quintile	0.0	0.0	0.4	4.0	4.2	42.1	0.0	0.0
		Fourth Quintile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Low Quintile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	- Fringe Area	Top Quintile	0.3	9.5	0.2	1.2	5.7	54.0	0.0	0.1
		Second Quintile	0.1	3.9	0.2	1.5	2.8	28.0	0.2	1.3
		Third Quintile	0.0	1.4	0.6	5.5	1.5	14.6	0.0	0.0
		Fourth Quintile	0.1	2.3	0.4	3.1	0.4	3.8	0.0	0.0
		Low Quintile	0.0	0.0	0.9	7.6	0.5	4.5	0.0	0.0

Note: Unit = Litres

* Kilograms

** Unit (Kwh)

Source: Socio-Economic Survey, 1986.

Table A.6(continued)

Household Energy Consumption

Region	Income Class	LPG others *		Charcoal *		Wood *		Electricity **		Total	
		Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
North	Top Quintile	0.0	0.0	27.1	43.0	16.3	14.8	76.2	108.5	147.3	437.3
	Second Quintile	0.0	0.1	27.1	41.5	35.3	33.4	34.1	40.6	107.0	220.6
	Third Quintile	0.0	0.0	28.5	40.3	29.7	24.7	22.6	25.2	86.1	142.0
	Fourth Quintile	0.0	0.0	28.3	38.7	28.3	20.5	16.2	16.8	76.5	112.2
	Low Quintile	0.0	0.0	23.9	32.4	36.7	24.4	12.2	12.8	75.8	98.2
Northeast	Top Quintile	0.0	0.0	34.0	48.1	12.9	8.5	70.3	98.2	143.8	415.5
	Second Quintile	0.0	0.0	33.6	42.0	44.1	24.9	27.9	33.5	114.0	183.0
	Third Quintile	0.0	0.0	34.1	40.3	54.0	26.9	15.4	16.3	108.1	128.9
	Fourth Quintile	0.0	0.0	28.0	31.5	66.9	31.5	12.5	12.8	110.0	101.6
	Low Quintile	0.0	0.1	23.8	25.7	71.9	32.2	7.3	6.9	105.2	85.1
Central	Top Quintile	0.0	0.2	15.2	35.7	8.8	9.7	100.7	147.1	155.6	468.5
	Second Quintile	0.0	0.0	20.5	45.1	17.3	18.9	54.7	73.3	108.1	286.5
	Third Quintile	0.0	0.3	22.5	49.6	22.1	23.7	38.1	46.7	90.3	186.5
	Fourth Quintile	0.0	0.0	20.0	44.1	28.9	28.1	31.7	38.0	85.9	162.0
	Low Quintile	0.0	0.0	22.6	47.3	31.5	25.4	29.8	36.1	90.9	178.7
South	Top Quintile	0.0	0.0	10.7	29.6	14.9	11.0	80.9	116.6	132.7	427.7
	Second Quintile	0.0	0.0	23.7	59.9	32.7	22.7	36.6	47.3	105.9	285.2
	Third Quintile	0.0	0.0	20.0	50.8	36.0	22.5	24.8	29.2	89.5	192.0
	Fourth Quintile	0.0	0.0	18.2	45.3	41.8	32.3	20.6	24.6	87.8	174.1
	Low Quintile	0.0	0.3	16.5	46.6	39.8	32.2	14.8	16.3	76.0	145.1
Bangkok	- City Core										
	Top Quintile	0.0	0.2	8.9	40.0	0.6	0.9	189.0	315.2	238.2	735.2
	Second Quintile	0.0	0.0	11.5	48.0	1.0	2.6	159.7	222.3	182.0	361.8
	Third Quintile	0.0	0.0	16.3	69.7	4.1	8.4	137.5	186.9	160.8	291.8
	Fourth Quintile	0.0	0.0	14.8	91.5	18.5	17.9	109.7	164.7	143.4	277.4
Low Quintile	0.0	0.0	14.1	46.1	0.2	0.7	95.5	142.4	112.0	212.3	
- Suburbs	Top Quintile	0.0	0.0	5.9	27.8	4.8	5.3	145.0	225.7	198.7	677.6
	Second Quintile	0.0	0.0	5.4	25.9	10.2	12.4	96.9	138.5	127.7	324.6
	Third Quintile	0.0	0.0	10.5	56.2	18.3	14.4	53.5	68.6	86.9	185.3
	Fourth Quintile	0.0	0.0	6.7	26.7	0.0	0.0	43.6	54.2	50.3	80.8
	Low Quintile	0.0	0.0	0.0	0.0	0.0	0.0	58.0	70.0	58.0	70.0
- Fringe Area	Top Quintile	0.0	0.0	3.3	16.3	16.5	18.0	112.6	168.5	155.5	427.8
	Second Quintile	0.0	0.0	5.1	25.9	24.9	21.3	73.8	100.0	117.2	280.5
	Third Quintile	0.0	0.0	2.5	13.7	23.3	25.6	53.6	68.5	86.1	169.2
	Fourth Quintile	0.4	2.4	5.3	24.9	42.4	37.7	60.3	80.0	114.1	190.7
	Low Quintile	0.0	0.0	4.2	15.1	21.2	30.5	64.5	89.7	95.2	189.3

Note: Unit = Litres

* Kilograms

** Unit (Kwh)

Source: Socio-Economic Survey, 1986.

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THAI GOVERNMENT REVENUE IN NOMINAL TERMS FY 1961- FY 1967

(thousand baht)

Item	1961	1962	1963	1964	1965	1966
A. Taxes and duties	6,675,291	7,371,289	7,812,124	8,855,230	10,210,955	11,437,137
1. Direct taxes	681,631	728,056	780,406	853,953	1,114,953	1,243,722
1.1. Personal income tax	461,972	451,186	468,189	503,269	633,186	686,665
1.2. Corporate income tax	219,659	276,870	312,217	350,684	481,767	555,057
1.3. petroleum income tax						
2. General sales taxes	796,103	1,456,180	1,543,540	1,786,898	2,005,869	2,471,695
2.1. Business tax	618,459	1,387,883	1,491,062	1,738,357	1,943,201	2,395,911
2.2. Stamp duty	177,644	68,307	52,478	58,539	62,668	75,784
3. Specific sales taxes	1,000,553	930,896	957,549	1,072,257	1,720,477	2,025,736
3.1. Excise taxes	863,191	768,952	784,291	854,460	1,412,191	1,656,375
b. Distilled spirits tax	168,711	178,952	194,436	205,143	209,396	237,512
f. Tobacco stamp duty	37,133	29,097	30,026	31,038	30,107	31,605
i. Petroleum and related product tax				30,656	528,126	624,139
3.2. Taxes on natural resources	137,362	161,744	173,258	217,797	308,286	367,361
4. Customs duties	3,549,669	3,666,223	3,741,545	4,309,551	4,407,737	4,664,264
4.1. Export tax	430,000	358,478	336,165	357,096	380,127	396,246
4.2. Import tax	2,283,406	2,503,936	2,607,008	2,854,425	2,766,413	3,190,605
5. Fees and permits	239,510	232,253	248,736	250,015	285,782	310,900
6. Other taxes and duties	407,825	357,881	540,348	572,558	676,127	720,820
B. Sales of property and assets	52,870	52,202	49,305	58,237	62,595	38,184
C. Sales of services	140,701	148,967	266,554	179,513	247,812	329,649
D. State enterprises	118,324	206,897	226,250	206,401	233,986	262,767
E. Other government revenues	229,822	186,529	249,393	318,931	402,970	646,598
Total government revenue	7,217,008	7,967,894	8,603,626	9,618,312	11,158,318	12,714,335

Note : Sugar premium is collected in Rice premium during 1973-1975 :

Source : Bank of Thailand.

THAI GOVERNMENT REVENUE IN NOMINAL TERMS FY 1961- FY 1987

(thousand baht)

Item	1967	1968	1969	1970	1971	1972
A. Taxes and duties	13,302,318	14,862,929	16,624,943	16,971,356	17,273,688	18,898,004
1. Direct taxes	1,504,094	1,725,500	1,972,650	2,169,146	2,382,817	2,550,160
1.1. Personal income tax	825,340	972,686	1,121,532	1,271,801	1,407,107	1,555,955
1.2. Corporate income tax	678,754	752,814	851,118	897,345	955,710	994,205
1.3. petroleum income tax						
2. General sales taxes	2,858,550	3,177,914	3,467,828	3,701,050	4,049,317	4,446,994
2.1. Business tax	2,868,676	3,068,234	3,344,769	3,576,821	3,927,476	4,307,469
2.2. Stamp duty	89,874	109,680	123,059	124,229	121,841	139,525
3. Specific sales taxes	2,222,228	2,516,228	2,875,738	3,177,613	3,700,635	3,965,404
3.1. Excise taxes	1,882,854	2,142,913	2,521,721	2,779,757	3,290,113	3,582,309
b. Distilled spirits tax	284,310	288,688	299,733	316,346	335,950	435,440
f. Tobacco stamp duty	376,963	859,776	738,497	883,080	988,520	1,064,332
i. Petroleum and related product tax	631,723	786,902	999,694	1,066,431	1,398,958	1,382,122
3.2. Taxes on natural resources	359,574	373,315	354,017	397,856	410,722	433,095
4. Customs duties	5,485,770	6,183,105	6,980,891	8,443,424	5,818,919	6,052,757
4.1. Export tax	326,897	256,114	439,661	392,956	169,405	245,981
4.2. Import tax	4,217,233	4,797,016	5,294,049	5,389,079	5,181,453	5,641,369
5. Fees and permits	322,486	369,746	336,648	368,247	361,287	414,538
6. Other taxes and duties	809,190	890,436	981,388	1,111,876	1,162,503	1,468,150
B. Sales of property and assets	41,205	40,964	49,416	69,712	88,963	95,129
C. Sales of services	320,256	332,189	403,230	396,529	374,573	553,818
D. State enterprises	465,892	557,063	632,839	613,488	787,425	821,463
E. Other government revenues	700,966	856,746	869,665	1,053,579	997,720	928,293
Total government revenue	14,830,637	16,649,911	18,580,093	19,104,664	19,522,369	21,296,707

Note : Sugar premium is collected in Rice premium during 1973-1975 :

Source : Bank of Thailand.

THAI GOVERNMENT REVENUE IN NOMINAL TERMS FY 1961- FY 1967

(thousand baht)

Item	1973	1974	1975	1976	1977	1978
A. Taxes and duties	22,720,638	35,240,160	34,409,805	37,874,360	47,286,527	57,442,231
1. Direct taxes	3,168,194	4,729,135	6,102,239	6,806,294	8,163,230	11,439,909
1.1. Personal income tax	1,700,423	2,045,445	2,593,054	3,037,502	3,604,857	5,047,699
1.2. Corporate income tax	1,467,771	2,683,690	3,509,185	3,768,792	4,558,373	8,392,210
1.3. petroleum income tax						
2. General sales taxes	5,247,996	7,456,519	7,953,734	9,105,432	11,239,806	13,496,896
2.1. Business tax	5,096,782	7,287,984	7,769,749	8,895,042	10,972,591	13,106,092
2.2. Stamp duty	151,214	168,535	183,985	210,390	267,215	390,804
3. Specific sales taxes	4,918,037	7,102,665	7,731,678	8,875,616	11,200,493	13,213,540
3.1. Excise taxes	4,473,062	6,304,646	6,991,313	8,042,757	9,803,262	10,916,105
b. Distilled spirits tax	818,332	1,095,442	1,395,655	1,731,592	1,917,214	2,377,920
f. Tobacco stamp duty	1,154,485	1,797,961	2,184,600	2,743,847	3,079,035	3,188,929
i. Petroleum and related product tax	1,625,231	2,496,414	2,257,807	2,204,406	3,079,808	3,378,004
3.2. Taxes on natural resources	444,975	798,019	740,365	832,859	1,397,231	2,297,435
4. Customs duties	7,184,890	12,935,388	10,374,636	10,342,393	13,482,227	15,928,507
4.1. Export tax	544,549	1,425,879	868,050	1,239,267	1,680,325	1,774,987
4.2. Import tax	6,640,341	11,509,509	9,506,586	9,103,126	11,801,902	14,149,971
5. Fees and permits	467,807	489,530	444,624	547,219	399,720	436,184
6. Other taxes and duties	1,733,714	2,526,923	1,802,894	2,197,406	2,801,051	2,927,195
B. Sales of property and assets	91,358	86,234	122,402	710,782	238,437	206,322
C. Sales of services	566,630	608,651	677,873	848,141	901,278	1,050,821
D. State enterprises	891,933	961,551	1,835,510	2,098,034	1,598,362	1,358,970
E. Other government revenues	1,375,584	1,319,631	1,378,807	1,388,780	2,090,610	2,438,146
Total government revenue	25,646,143	38,216,227	38,424,397	42,920,097	52,115,212	62,486,490

Note : Sugar premium is collected in Rice premium during 1973-1975 :

Source : Bank of Thailand.

THAI GOVERNMENT REVENUE IN NOMINAL TERMS FY 1961- FY 1987

(thousand baht)

Item	1979	1980	1981	1982	1983	1984
A. Taxes and duties	69,783,139	85,721,018	99,566,150	103,194,549	123,360,574	134,826,480
1. Direct taxes	13,736,248	16,846,846	21,581,163	24,435,343	26,705,939	31,100,899
1.1. Personal income tax	6,103,120	7,180,006	8,483,964	11,430,329	13,766,461	16,716,284
1.2. Corporate income tax	7,633,128	9,656,840	13,097,199	13,005,014	12,939,476	14,384,665
1.3. Petroleum income tax						
2. General sales taxes	15,272,044	17,989,549	21,659,351	22,696,673	25,429,666	30,434,411
2.1. Business tax	14,809,074	17,478,895	21,101,691	22,059,102	24,573,443	28,418,803
2.2. Stamp duty	462,970	504,654	557,660	637,571	856,223	1,014,608
3. Specific sales taxes	17,819,594	23,829,051	26,508,026	30,343,574	32,435,180	34,557,904
3.1. Excise taxes	14,638,519	19,603,660	23,023,419	27,161,414	30,201,421	32,200,685
b. Distilled spirits tax	2,668,348	2,918,117	3,591,729	4,168,931	4,821,764	5,402,203
f. Tobacco stamp duty	3,661,669	4,545,117	6,201,674	7,556,484	8,820,596	9,201,596
i. Petroleum and related product tax	5,669,290	9,132,503	9,789,606	11,292,743	11,776,829	12,293,212
3.2. Taxes on natural resources	3,180,075	4,225,391	3,484,607	3,182,160	2,233,759	2,357,219
4. Customs duties	19,241,974	22,411,898	24,963,797	21,543,485	27,864,964	32,818,667
4.1. Export tax	2,754,317	3,463,309	3,127,280	1,769,755	2,379,377	2,176,555
4.2. Import tax	16,475,430	18,948,589	21,836,517	19,773,740	25,485,587	30,642,112
5. Fees and permits	563,259	946,354	782,210	1,239,347	6,165,879	750,604
6. Other taxes and duties	3,150,020	3,703,320	4,071,603	2,936,117	4,758,926	5,163,975
B. Sales of property and assets	178,501	225,570	328,053	327,713	420,103	437,905
C. Sales of services	1,202,607	1,063,812	1,109,197	1,736,260	1,685,430	1,699,504
D. State enterprises	1,758,304	2,264,218	3,472,131	3,390,512	3,456,686	3,585,286
E. Other government revenues	2,368,766	3,265,399	5,813,457	5,194,117	7,687,679	7,295,456
Total government revenue	75,291,317	92,539,817	110,388,988	113,843,151	138,810,472	147,845,611

Note : Sugar premium is collected in Rice premium during 1973-1975 :

Source : Bank of Thailand.

THAI GOVERNMENT REVENUE IN NOMINAL TERMS FY 1981- FY 1987 (thousand baht)

Item	1985	1986	1987
A. Taxes and duties	143,401,237	150,298,821	175,900,641
1. Direct taxes	33,737,439	35,860,675	35,730,317
1.1. Personal income tax	19,205,296	19,673,204	18,564,871
1.2. Corporate income tax	14,531,369	15,885,374	17,161,607
1.3. Petroleum income tax	774	102,097	3,839
2. General sales taxes	30,710,448	29,269,723	33,802,510
2.1. Business tax	29,662,124	28,257,305	32,306,002
2.2. Stamp duty	1,048,324	1,012,418	1,496,508
3. Specific sales taxes	40,162,127	44,058,492	56,834,051
3.1. Excise taxes	36,548,179	41,390,420	54,685,904
b. Distilled spirits tax	6,110,829	5,966,647	6,317,458
f. Tobacco stamp duty	9,525,056	9,575,483	9,775,251
i. Petroleum and related product tax	14,225,841	16,818,615	24,103,596
3.2. Taxes on natural resources	3,613,948	2,668,072	1,947,877
4. Customs duties	31,826,232	30,784,593	37,805,245
4.1. Export tax	1,322,798	560,697	1,321,288
4.2. Import tax	30,503,434	30,233,896	36,483,957
5. Fees and permits	1,889,176	5,425,984	5,246,264
6. Other taxes and duties	5,295,815	5,089,355	6,482,524
B. Sales of property and assets	453,610	504,650	425,824
C. Sales of services	1,994,431	2,433,412	2,671,346
D. State enterprises	6,287,339	5,760,759	6,089,174
E. Other government revenues	7,059,349	6,261,824	7,397,856
Total government revenue	159,195,966	165,259,466	192,484,841

Note : Sugar premium is collected in Rice premium during 1973-1975 :

Source : Bank of Thailand.

SMPL 1970 - 1987
 18 Observations
 LS // Dependent Variable is LTAX

	COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	-3.6830304	0.1983326	-18.569966
LGDPN	1.1240640	0.0151586	74.153492
R-squared	0.997099	Mean of dependent var	11.00336
Adjusted R-squared	0.996917	S.D. of dependent var	0.803172
S.E. of regression	0.044593	Sum of squared resid	0.031817
Durbin-Watson stat	1.977233	F-statistic	5498.740
Log likelihood	31.50221		
Covariance Matrix			
C,C	0.03933584	C, LGDPN	-0.00300222
LGDPN, LGDPN	0.00022978		

Residual Plot				obs	RESIDUAL	ACTUAL	FITTED
:	:	:	:*	1970	0.05061	9.74484	9.69423
:	:	*	:	1971	0.02921	9.76853	9.73932
:	*	:	:	1972	0.00047	9.85566	9.85520
*:	:	:	:	1973	-0.05126	10.1040	10.1552
:	:	:	*	1974	0.08585	10.4983	10.4124
:	*	:	:	1975	-0.04187	10.4636	10.5055
*	:	:	:	1976	-0.07721	10.5780	10.6552
:	*	:	:	1977	-0.01905	10.8073	10.8264
:	:	*	:	1978	-0.03427	11.0063	11.0406
:	:	*	:	1979	0.01446	11.2069	11.1924
:	*	*	:	1980	0.01357	11.3905	11.3769
:	:	*	:	1981	-0.01635	11.5219	11.5383
*	:	:	:	1982	-0.06098	11.5624	11.6234
:	:	*	:	1983	0.02751	11.7680	11.7405
:	:	*	:	1984	0.00602	11.8222	11.8162
:	*	*	:	1985	0.02157	11.8841	11.8626
:	:	*	:	1986	-0.00713	11.9460	11.9532
:	:	*	*	1987	0.05887	12.1318	12.0730

SMPL 1970 - 1987
 18 Observations
 LS // Dependent Variable is LTINC

	COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	-9.1149168	0.3133292	-29.090548
LGDPN	1.4093742	0.0239478	58.851873

R-squared	0.995402	Mean of dependent var	9.299178
Adjusted R-squared	0.995114	S.D. of dependent var	1.007891
S.E. of regression	0.070449	Sum of squared resid	0.079410
Durbin-Watson stat	1.491052	F-statistic	3463.543
Log likelihood	23.27065		

Covariance Matrix

C,C	0.09817516	C, LGDPN	-0.00749301
LGDPN, LGDPN	0.00057350		

Residual Plot				obs	RESIDUAL	ACTUAL	FITTED
	:	*	:	1970	0.03844	7.69621	7.65777
	:	:	*	1971	0.08381	7.79811	7.71430
	*	:	:	1972	-0.01182	7.84776	7.85959
*	:	:	:	1973	-0.14508	8.09071	8.23579
	*	:	:	1974	-0.06573	8.49249	8.55822
	:	:	*	1975	0.08219	8.75715	8.67497
	*	:	:	1976	-0.03956	8.82306	8.86262
	:	*	:	1977	-0.03265	9.04464	9.07729
	:	*	:	1978	0.03088	9.37670	9.34582
	*	*	:	1979	0.01824	9.55450	9.53626
	:	*	:	1980	-0.04506	9.72245	9.76750
	:	:	*	1981	0.05067	10.0206	9.96989
	:	*	:	1982	0.04158	10.1182	10.0766
	:	*	:	1983	0.01183	10.2353	10.2235
	:	:	*	1984	0.04921	10.3675	10.3183
	:	:	*	1985	0.09322	10.4697	10.3765
	*	:	:	1986	-0.03362	10.4564	10.4900
*	:	:	:	1987	-0.12656	10.5137	10.6403

SMPL 1970 - 1987
 18 Observations
 LS // Dependent Variable is LTPS

	COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	-9.3098198	0.6894441	-13.503372
LGDPN	1.3706995	0.0526944	26.012254

R-squared	0.976900	Mean of dependent var	8.598973
Adjusted R-squared	0.975456	S.D. of dependent var	0.989473
S.E. of regression	0.155016	Sum of squared resid	0.384477
Durbin-Watson stat	0.575355	F-statistic	676.6374
Log likelihood	9.075288		

Covariance Matrix

C,C	0.47533312	C, LGDPN	-0.03627877
LGDPN, LGDPN	0.00277670		

Residual Plot			obs	RESIDUAL	ACTUAL	FITTED
:	:	:	1970	0.16597	7.16858	7.00261
:	:	:	1971	0.22517	7.28276	7.05759
:	:	:	1972	0.15163	7.35052	7.19889
:	*	:	1973	-0.09169	7.47307	7.56476
*	:	:	1974	-0.23343	7.64492	7.87835
:	*	:	1975	-0.08057	7.91132	7.99189
*	:	:	1976	-0.14985	8.02454	8.17439
*	:	:	1977	-0.14755	8.23563	8.38317
:	*	:	1978	-0.05911	8.58523	8.64433
:	*	:	1979	-0.08585	8.74369	8.82955
*	:	:	1980	-0.16321	8.89124	9.05445
*	:	:	1981	-0.14230	9.10897	9.25128
:	:	*	1982	0.03850	9.39358	9.35508
:	:	*	1983	0.09579	9.59370	9.49790
:	:	:	1984	0.16216	9.75232	9.59016
:	:	:	1985	0.24882	9.89551	9.64669
:	:	*	1986	0.10644	9.86360	9.75716
:	*	:	1987	-0.04092	9.86235	9.90327

SMPL 1971 - 1987
 17 Observations
 LS // Dependent Variable is LTPS
 Convergence achieved after 2 iterations

	COEFFICIENT	STANDARD ERROR	T-STATIC
C	-9.5815141	1.7915666	-5.3481204
LGDPN	1.3884539	0.1334575	10.403715
AR(1)	0.6681827	0.1842064	3.6273588
R-squared	0.987639	Mean of depen't var	8.683113
Adjusted R-squared	0.985873	S.D. of dependent var	0.951235
S.E. of regression	0.113059	Sum of squared resid	0.178953
Durbin-Watson stat	1.386787	F-statistic	559.3095
Log likelihood	14.58571		

Covariance Matrix

C,C	3.20971105	C, LGDPN	-0.23882254
C, AR(1)	-0.04872998	LGDPN, LGDPN	0.01781091
LGDPN, AR(1)	0.00331125	AR(1), AR(1)	0.03393200

Residual Plot		obs	RESIDUAL	ACTUAL	FITTED
:	:	1971	0.13360	7.28276	7.14916
:	*	1972	0.01915	7.35052	7.33137
*	:	1973	-0.17855	7.47307	7.65162
*	:	1974	-0.15860	7.64492	7.80351
:	*	1975	0.09021	7.91132	7.82111
:	*	1976	-0.08259	8.02454	8.10713
:	*	1977	-0.03512	8.23563	8.27074
:	*	1978	0.05021	8.58523	8.53502
:	*	1979	-0.03577	8.74369	8.77946
:	*	1980	-0.09657	8.89124	8.98780
:	*	1981	-0.02457	9.10897	9.13355
:	*	1982	0.14262	9.39358	9.25096
:	*	1983	0.07815	9.59370	9.51555
:	*	1984	0.10627	9.75232	9.64604
:	*	1985	0.14865	9.89551	9.74685
:	*	1986	-0.05257	9.86360	9.91617
*	:	1987	-0.10573	9.86235	9.96808

SMPL 1970 - 1987
 18 Observations
 LS // Dependent Variable is LTCOR

	COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	-10.487788	0.6545335	-16.023300
LGDPN	1.4607262	0.0500262	29.199248

R-squared	0.981579	Mean of dependent var	8.597243
Adjusted R-squared	0.980428	S.D. of dependent var	1.051944
S.E. of regression	0.147166	Sum of squared resid	0.346526
Durbin-Watson stat	0.626332	F-statistic	852.5961
Log likelihood	10.01062		

Covariance Matrix

C,C	0.42841415	C, LGDPN	-0.03269778
LGDPN, LGDPN	0.00250262		

Residual Plot		obs	RESIDUAL	ACTUAL	FITTED
:	*	1970	-0.09141	6.80461	6.89603
:	*	1971	-0.06605	6.88857	6.95462
*	:	1972	-0.19445	6.91075	7.10520
*	:	1973	-0.17922	7.31588	7.49511
:	*	1974	0.10379	7.93308	7.82929
:	:	1975	0.24615	8.19644	7.95029
:	*	1976	0.08046	8.22523	8.14477
:	*	1977	0.08805	8.45532	8.36727
:	*	1978	0.12749	8.77308	8.64558
:	*	1979	0.12365	8.96661	8.84296
:	*	1980	0.08814	9.17077	9.08263
:	:	1981	0.21420	9.50659	9.29239
:	*	1982	0.05255	9.45556	9.40301
:	*	1983	-0.06739	9.48782	9.55521
:	*	1984	-0.06365	9.58987	9.65353
:	*	1985	-0.07230	9.64147	9.71377
*	:	1986	-0.17975	9.65175	9.83150
*	:	1987	-0.21024	9.77696	9.98720

SMPL 1971 - 1987
 17 Observations
 LS // Dependent Variable is LTCOR
 Convergence achieved after 2 iterations

	COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	-9.465584	2.1118249	-4.4821701
LGDPN	1.3837339	0.1572363	8.8003490
AR(1)	0.6847129	0.2073935	3.3015163
R-squared	0.987935	Mean of dependent var	8.702691
Adjusted R-squared	0.986212	S.D. of dependent var	0.981371
S.E. of regression	0.115235	Sum of squared resid	0.185909
Durbin-Watson stat	1.631625	F-statistic	573.2099
Log likelihood	14.26161		

Covariance Matrix

C,C	4.45980440	C, LGDPN	-0.33176188
C, AR(1)	0.18819457	LGDPN, LGDPN	0.02472324
LGDPN, AR(1)	-0.01395608	AR(1), AR(1)	0.04301205

Residual Plot				obs	RESIDUAL	ACTUAL	FITTED
:	:	*	:	1971	-0.03377	6.88857	6.92235
*	:	:	:	1972	-0.17372	6.91075	7.08447
:	:	*	:	1973	-0.05546	7.31588	7.37135
:	:	:	:	1974	0.22067	7.93308	7.71241
:	:	:	:	1975	0.16356	8.19644	8.03288
:	*	:	:	1976	-0.09372	8.22523	8.31895
:	:	*	:	1977	0.03202	8.45532	8.42329
:	:	*	:	1978	0.07292	8.77308	8.70016
:	:	*	:	1979	0.04243	8.96661	8.92419
:	:	*	:	1980	0.01505	9.17077	9.15572
:	:	:	:	1981	0.16784	9.50659	9.33875
:	*	:	:	1982	-0.08187	9.45556	9.53743
:	*	:	:	1983	-0.08710	9.48782	9.57492
:	:	*	:	1984	-0.00154	9.58987	9.59142
:	:	*	:	1985	-0.01312	9.64147	9.65460
*	:	:	:	1986	-0.11062	9.65175	9.76237
:	*	:	:	1987	-0.06358	9.77696	9.84055

SMPL 1970 - 1987
 18 Observations
 LS // Dependent Variable is LTIND

	COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	-3.0831639	0.2518941	-12.239921
LGDPN	1.0623065	0.0192523	55.178082

R-squared	0.994772	Mean of dependent var	10.79634
Adjusted R-squared	0.994446	S.D. of dependent var	0.759932
S.E. of regression	0.056636	Sum of squared resid	0.051323
Durbin-Watson stat	1.980530	F-statistic	3044.621
Log likelihood	27.19907		

Covariance Matrix

C,C	0.06345064	C, LGDPN	-0.00484273
LGDPN, LGDPN	0.00037065		

Residual Plot

	obs	RESIDUAL	ACTUAL	FITTED
:	1970	0.04769	9.60683	9.55914
:	1971	0.01666	9.61840	9.60175
:	1972	0.00022	9.71148	9.71126
:	1973	-0.03419	9.96062	9.99481
:	1974	0.11589	10.3537	10.2378
:	1975	-0.06248	10.2634	10.3258
:	1976	-0.07918	10.3881	10.4673
:	1977	-0.00999	10.6191	10.6291
:	1978	-0.04337	10.7881	10.8315
:	1979	0.01918	10.9942	10.9750
:	1980	0.02942	11.1788	11.1493
:	1981	-0.03202	11.2699	11.3019
:	1982	-0.08898	11.2934	11.3823
:	1983	0.03176	11.5248	11.4930
:	1984	-0.00819	11.5563	11.5645
:	1985	-0.00268	11.6057	11.6083
:	1986	-0.00342	11.6905	11.6939
:	1987	0.10367	11.9108	11.8072

SMPL 1970 - 1987
 18 Observations
 LS // Dependent Variable is LTBUS

	COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	-4.3129936	0.1826108	-23.618504
LGDPN	1.0544364	0.0139570	75.549007
R-squared	0.997205	Mean of dependent var	9.463683
Adjusted R-squared	0.997030	S.D. of dependent var	0.753381
S.E. of regression	0.041058	Sum of squared resid	0.026973
Durbin-Watson stat	1.912145	F-statistic	5707.652
Log likelihood	32.98880		

Covariance Matrix

C,C	0.03334670	C, LGDPN	-0.00254511
LGDPN, LGDPN	0.00019480		

Residual Plot		obs	RESIDUAL	ACTUAL	FITTED
:	*	1970	-0.02010	8.21555	8.23565
:		1971	0.01536	8.29330	8.27794
:	*	1972	-0.00917	8.37747	8.38664
:	*	1973	-0.03633	8.63177	8.66810
:		1974	0.01093	8.92026	8.90933
:	*	1975	-0.00661	8.99007	8.99667
:		1976	0.00371	9.14078	9.13706
:		1977	0.05321	9.35088	9.29768
:	*	1978	0.02101	9.51959	9.49858
:	*	1979	-0.01266	9.62839	9.64106
:		1980	0.00403	9.81809	9.81407
:	*	1981	0.01131	9.97678	9.96548
:	*	1982	-0.02464	10.0207	10.0453
:		1983	-0.00103	10.1542	10.1552
:		1984	0.08913	10.3153	10.2262
:	*	1985	0.02299	10.2927	10.2697
*		1986	-0.10934	10.2453	10.3546
:	*	1987	-0.01179	10.4552	10.4670

SMPL 1970 - 1987
 18 Observations
 LS // Dependent Variable is LTSEL

	COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	-7.7514605	0.3554561	-21.807082
LGDPN	1.3221880	0.0271676	48.667831

R-squared	0.993290	Mean of dependent var	9.523508
Adjusted R-squared	0.992871	S.D. of dependent var	0.946546
S.E. of regression	0.079921	Sum of squared resid	0.102199
Durbin-Watson stat	0.655583	F-statistic	2368.558
Log likelihood	21.00000		

Covariance Matrix

C,C	0.12634905	C, LGDPN	-0.00964332
LGDPN, LGDPN	0.00073808		

Residual Plot				obs	RESIDUAL	ACTUAL	FITTED
:	:	*	:	1970	0.03893	8.02257	7.98364
:	:	:	**	1971	0.09132	8.12800	8.03667
:	:	:	**	1972	0.09345	8.26642	8.17297
:	*	:	:	1973	-0.02993	8.49597	8.52590
:	*	*	:	1974	-0.01406	8.81433	8.82839
:	*	*	:	1975	-0.02692	8.91099	8.93791
:	*	:	:	1976	-0.04230	9.07165	9.11395
*	*	:	:	1977	-0.07041	9.24494	9.31535
:	*	:	:	1978	-0.17086	9.39641	9.56726
:	*	:	:	1979	-0.04915	9.69677	9.74592
:	*	*	:	1980	0.00398	9.96684	9.96286
:	*	:	:	1981	-0.03546	10.1173	10.1527
:	*	*	:	1982	-0.00390	10.2490	10.2529
:	*	:	:	1983	-0.02180	10.3688	10.3906
:	*	*	:	1984	-0.03937	10.4402	10.4796
:	*	:	:	1985	0.00173	10.5359	10.5341
:	:	:	*	1986	0.10288	10.7436	10.6407
:	:	:	*	1987	0.17186	10.9535	10.7816

SMPL 1971 - 1987

17 Observations

LS // Dependent Variable is LTSEL

Convergence achieved after 2 iterations

	COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	-8.3487073	1.4314318	-5.8324172
LGDPN	1.3678751	0.1067709	12.811307
AR(1)	0.7046217	0.2524512	2.7911203
R-squared	0.995311	Mean of dependent var	9.611798
Adjusted R-squared	0.994641	S.D. of dependent var	0.896026
S.E. of regression	0.065591	Sum of squared resid	0.060230
Durbin-Watson stat	1.581905	F-statistic	1485.955
Log likelihood	23.84183		
Covariance Matrix			
C,C	2.04899690	C, LGDPN	-0.15272615
C, AR(1)	-0.21058823	LGDPN, LGDPN	0.01140003
LGDPN, AR(1)	0.01579550	AR(1), AR(1)	0.06373161

Residual Plot				obs	RESIDUAL	ACTUAL	FITTED
:	:	:	:*	1971	0.07787	8.12800	8.05012
:	:	*	:	1972	0.03966	8.26642	8.22676
*	:	:	:	1973	-0.09409	8.49597	8.59006
:	:	*	:	1974	0.00686	8.81433	8.80747
:	:	*	:	1975	-0.01361	8.91099	8.92460
:	:	*	:	1976	-0.02334	9.07165	9.09499
:	*	:	:	1977	-0.04329	9.24494	9.28823
*	:	:	:	1978	-0.12773	9.39641	9.52413
:	:	*	*	1979	0.06472	9.69677	9.63205
:	:	:	:	1980	0.02894	9.96684	9.93790
:	*	:	:	1981	-0.04921	10.1173	10.1665
:	:	*	:	1982	0.01130	10.2490	10.2377
:	:	*	:	1983	-0.03116	10.3688	10.4000
:	*	:	:	1984	-0.03584	10.4402	10.4761
:	:	*	:	1985	0.01792	10.5359	10.5180
:	:	:	:	1986	0.08776	10.7436	10.6558
:	:	:	:*	1987	0.08319	10.9535	10.8703

SMPL 1970 - 1987
 18 Observations
 LS // Dependent Variable is LTIMP

	COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	-2.7109158	0.3575219	-7.5825159
LGDPN	0.9399599	0.0273255	34.398650
R-squared	0.986659	Mean of dependent var	9.570074
Adjusted R-squared	0.985825	S.D. of dependent var	0.675169
S.E. of regression	0.080386	Sum of squared resid	0.103390
Durbin-Watson stat	1.293823	F-statistic	1183.267
Log likelihood	20.89569		
Covariance Matrix			
C,C	0.12782194	C, LGDPN	-0.00975573
LGDPN, LGDPN	0.00074668		

Residual Plot				obs	RESIDUAL	ACTUAL	FITTED
:	:	:	*	1970	0.11953	8.59489	8.47536
:	:	*	:	1971	0.05994	8.57301	8.51307
:	:	*	:	1972	0.02234	8.63231	8.60996
:	*	:	:	1973	-0.02086	8.84000	8.86086
:	*	:	:	1974	-0.04409	9.03181	9.07590
*	:	:	:	1975	-0.10277	9.05099	9.15377
*	:	:	:	1976	-0.11997	9.15894	9.27892
:	:	*	:	1977	0.00795	9.43004	9.42209
:	:	*	:	1978	-0.00674	9.59445	9.60118
:	:	*	:	1979	0.02946	9.75765	9.72819
:	:	*	:	1980	-0.00615	9.87627	9.88242
:	:	*	:	1981	-0.02333	9.99406	10.0174
*	:	:	:	1982	-0.17598	9.91260	10.0886
:	:	*	:	1983	0.05394	10.2405	10.1865
:	:	*	:	1984	0.04885	10.2986	10.2498
:	:	*	:	1985	0.04484	10.3334	10.2885
:	*	:	:	1986	-0.01915	10.3452	10.3643
:	:	:	*	1987	0.13219	10.5967	10.4645

SMPL 1970 - 1987
 18 Observations
 LS // Dependent Variable is LTEXP

	COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	1.9873449	2.8080794	0.7077239
LGDPN	0.4072393	0.2146222	1.8974709
R-squared	0.183690	Mean of dependent var	7.308106
Adjusted R-squared	0.132671	S.D. of dependent var	0.677944
S.E. of regression	0.631373	Sum of squared resid	6.378100
Durbin-Watson stat	1.002987	F-statistic	3.600396
Log likelihood	-16.20338		
Covariance Matrix			
C,C	7.88530966	C, LGDPN	-0.60182920
LGDPN, LGDPN	0.04606268		

Residual Plot				obs	RESIDUAL	ACTUAL	FITTED
:	:	*	:	1970	-0.09094	6.74288	6.83382
*	:	:	:	1971	-0.82429	6.02587	6.85016
*	:	:	:	1972	-0.88578	6.00635	6.89214
:	:	*	:	1973	-0.05290	6.94794	7.00084
:	:	:	:	1974	1.42339	8.51739	7.09401
:	:	*	:	1975	0.14118	7.26892	7.12774
:	:	*	:	1976	0.03401	7.21597	7.18196
:	:	*	:	1977	0.18553	7.42952	7.24399
:	:	*	:	1978	0.25092	7.57250	7.32158
:	:	:	*	1979	0.63640	8.01301	7.37661
:	:	:	*	1980	0.68191	8.12533	7.44343
:	:	:	*	1981	0.43939	7.94130	7.50191
:	:	*	:	1982	-0.04054	7.49220	7.53275
:	:	*	:	1983	0.29537	7.87055	7.57518
:	:	*	:	1984	-0.07318	7.52941	7.60259
*	:	:	:	1985	-0.63560	6.98379	7.61939
*	:	:	:	1986	-0.96012	6.69208	7.65221
:	*	:	:	1987	-0.52473	7.17089	7.69562

SMPL 1971 - 1987
 17 Observations
 LS // Dependent Variable is LTEXP
 Convergence achieved after 2 iterations

	COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	1.5179408	5.9995327	0.2530098
LGDPN	0.4411024	0.4519690	0.9759574
AR(1)	0.5026507	0.2392309	2.1011110
R-squared	0.350615	Mean of dependent var	7.341355
Adjusted R-squared	0.257846	S.D. of dependent var	0.683514
S.E. of regression	0.588836	Sum of squared resid	4.654189
Durbin-Watson stat	1.611774	F-statistic	3.779433
Log likelihood	-13.46830		
Covariance Matrix			
C,C	35.9943928	C, LGDPN	-2.70846383
C, AR(1)	0.01360960	LGDPN, LGDPN	0.20427594
LGDPN, AR(1)	-0.00154474	AR(1), AR(1)	0.05723143

Residual Plot			obs	RESIDUAL	ACTUAL	FITTED
*	:	:	1971	-0.74691	6.02587	6.77278
:	***	:	1972	-0.44259	6.00635	6.44895
:	:	* :	1973	0.41391	6.94794	6.53402
:	:	:	* 1974	1.46835	8.51739	7.04904
*	:	:	1975	-0.55482	7.26892	7.82374
:	*	:	1976	-0.02059	7.21597	7.23656
:	:	* :	1977	0.18190	7.42952	7.24762
:	:	* :	1978	0.16728	7.57250	7.40523
:	:	*:	1979	0.51856	8.01301	7.49446
:	:	* :	1980	0.36704	8.12533	7.75829
:	:	* :	1981	0.09958	7.94130	7.84171
:	*	:	1982	-0.25857	7.49220	7.75077
:	:	* :	1983	0.31634	7.87055	7.55421
:	*	:	1984	-0.22156	7.52941	7.75097
*	:	:	1985	-0.59897	6.98379	7.58276
*:	:	:	1986	-0.64283	6.69208	7.33492
:	*	:	1987	-0.04655	7.17089	7.21744

SMPL 1970 - 1987
 18 Observations
 LS // Dependent Variable is LTOTH

	COEFFICIENT	STANDARD ERROR	T-STATISTIC
C	-3.6069202	0.6449397	-5.5926473
LGDPN	0.9365459	0.0492929	18.999612
R-squared	0.957558	Mean of dependent var	8.629464
Adjusted R-squared	0.954905	S.D. of dependent var	0.682862
S.E. of regression	0.145009	Sum of squared resid	0.336442
Durbin-Watson stat	2.168105	F-statistic	360.9853
Log likelihood	10.27641		
Covariance Matrix			
C,C	0.41594719	C, LGDPN	-0.03174627
LGDPN, LGDPN	0.00242979		

Residual Plot				obs	RESIDUAL	ACTUAL	FITTED
:	*	:	:	1970	-0.00664	7.53209	7.53873
:	*	:	:	1971	0.00083	7.57712	7.57629
:	:	*	:	1972	0.04629	7.71913	7.67284
:	*	:	:	1973	-0.01151	7.91132	7.92283
:	:	*	:	1974	0.10461	8.24170	8.13709
:	*	:	:	1975	-0.12365	8.09101	8.21467
*	:	:	:	1976	-0.15680	8.18256	8.33936
:	*	:	:	1977	0.01620	8.49821	8.48202
:	:	*	:	1978	0.06310	8.72356	8.66046
:	:	:	*	1979	0.17076	8.95777	8.78701
:	:	:	*	1980	0.17316	9.11383	8.94067
*	:	:	:	1981	-0.16228	8.91288	9.07516
:	*	:	:	1982	-0.21427	8.93182	9.14608
:	:	:	*	1983	0.22980	9.47347	9.24367
*	:	:	:	1984	-0.26100	9.04570	9.30670
:	*	:	:	1985	-0.06379	9.28154	9.34533
:	:	*	:	1986	0.05504	9.47585	9.42081
:	:	*	:	1987	0.14014	9.66078	9.52064

obs	TAX	TINC	TIND	TPS	TCOR	TIMP
1970	17066.00	2200.000	14866.00	1298.000	902.0000	5404.000
1971	17475.00	2436.000	15039.00	1455.000	981.0000	5287.000
1972	19066.00	2560.000	16506.00	1557.000	1003.000	5610.000
1973	24440.00	3264.000	21176.00	1760.000	1504.000	6905.000
1974	36252.00	4878.000	31374.00	2090.000	2788.000	8365.000
1975	35019.00	6356.000	28663.00	2728.000	3628.000	8527.000
1976	39260.00	6789.000	32471.00	3055.000	3734.000	9499.000
1977	49382.00	8473.000	40909.00	3773.000	4700.000	12457.00
1978	60252.00	11810.00	48442.00	5352.000	6458.000	14683.00
1979	73637.00	14108.00	59529.00	6271.000	7837.000	17286.00
1980	88473.00	16688.00	71593.00	7268.000	9612.000	19463.00
1981	100906.0	22484.00	78422.00	9036.000	13448.00	21896.00
1982	105076.0	24790.00	80286.00	12011.00	12779.00	20183.00
1983	129062.0	27870.00	101192.0	14672.00	13198.00	28014.00
1984	136246.0	31810.00	104436.0	17194.00	14616.00	29692.00
1985	144947.0	35231.00	109716.0	19841.00	15390.00	30742.00
1986	154202.0	34767.00	119435.0	19218.00	15549.00	31106.00
1987	185690.0	36817.00	148873.0	19194.00	17623.00	40002.00

obs	TEXP	TBUS	TSEL	TOTH	GDPO	GDPN
1970	848.0000	3698.000	3049.000	1867.000	136060.0	147385.0
1971	414.0000	3997.000	3388.000	1953.000	144607.0	153417.0
1972	406.0000	4348.000	3891.000	2251.000	164626.0	170076.0
1973	1041.000	5607.000	4895.000	2728.000	216543.0	222110.0
1974	5001.000	7482.000	6730.000	3796.000	271368.0	279206.0
1975	1435.000	8023.000	7413.000	3265.000	298816.0	303319.0
1976	1361.000	9328.000	8705.000	3578.000	337635.0	346516.0
1977	1685.000	11509.00	10352.00	4906.000	393030.0	403529.0
1978	1944.000	13624.00	12045.00	6146.000	469952.0	488226.0
1979	3020.000	15190.00	16265.00	7768.000	556240.0	558861.0
1980	3379.000	18363.00	21308.00	9080.000	684930.0	658509.0
1981	2811.000	21521.00	24767.00	7427.000	786166.0	760195.0
1982	1794.000	22487.00	28253.00	7569.000	846126.0	820002.0
1983	2619.000	25698.00	31851.00	13010.00	924913.0	910054.0
1984	1862.000	30191.00	34209.00	8482.000	988863.0	973412.0
1985	1079.000	29515.00	37642.00	10738.00	1041354.	1014399.
1986	806.0000	28150.00	46332.00	13041.00	1098362.	1099541.
1987	1301.000	34726.00	57154.00	15690.00	NA	1223218.

INDONESIA
STRUCTURE OF GOVERNMENT REVENUE
(BILLIONS OF RUPIAH : YEAR BEGINNING APRIL 1)

	1976	1977	1978	1979	1980
A. CURRENT REVENUE	2,968.00	3,634.00	4,378.00	7,050.00	10,406.00
B. TAX REVENUE	2,787.00	3,389.00	4,070.00	6,496.00	9,898.00
1. TAX ON INC., PROFITS, CAP. GAINS	1,974.00	2,449.00	2,920.00	5,038.00	8,118.00
1.1 INDIVIDUAL	87.00	103.00	122.00	148.00	184.00
1.2 CORPORATE	1,740.00	2,144.00	2,565.00	4,599.00	7,520.00
1.3 OTHER UNALLOC. TAX ON INC.	147.00	202.00	233.00	291.00	434.00
2. SOCIAL SECURITY CONTRIBUTIONS					
3. TAXES-PAYROLL OR MANPOWER					
4. TAXES ON PROPERTY	45.00	56.00	68.00	74.00	92.00
5. DOM. TAXES ON GOODS&SERV	416.00	481.00	600.00	656.00	899.00
5.1 GEN. SALES, TURNOVER OR V.A.T	267.00	300.00	347.00	329.00	461.00
5.2 EXCISES	132.00	181.00	253.00	327.00	438.00
5.3 PROFITS OF FISCAL MONOPOLIES					
5.4 OTHER TAXES ON GOODS & SERVS	17.00	0.00	0.00	0.00	0.00
6. TAXES-INTERNAT'L TRADE, TRANSAC	320.00	387.00	461.00	706.00	753.00
6.1 IMPORT DUTIES	256.00	288.00	295.00	317.00	448.00
6.2 EXPORT DUTIES	64.00	79.00	166.00	389.00	305.00
6.3 OTHER					
7. OTHER TAXES	11.00	13.00	18.00	19.00	29.00
ADJ. TO TAX REVENUE	1.00	3.00	3.00	3.00	7.00
C. NONTAX REVENUE	201.00	265.00	308.00	554.00	508.00
D. CAPITAL REVENUE					
TOTAL REVENUE	2,968.00	3,634.00	4,378.00	7,050.00	10,406.00
GDP	15,487.00	19,011.00	22,746.00	32,025.00	45,446.00
GDP DEFLATOR (1980=100)	46.80	52.60	58.40	77.40	100.00
POPULATION (MID-YEAR; MILLIONS)	133.53	136.63	139.80	143.04	146.38

SOURCE : GOVERNMENT FINANCE STATISTICS YEARBOOK

1977-86 FROM YEAR 1987 YEARBOOK

1975-76 FROM YEAR 1986 YEARBOOK

: BLANK () NO DATA

INDONESIA
STRUCTURE OF GOVERNMENT REVENUE
(BILLIONS OF RUPIAH : YEAR BEGINNING APRIL 1)

	1981	1982	1983	1984	1985
A. CURRENT REVENUE	13,763.00	12,815.00	15,511.00	18,724.00	20,347.00
B. TAX REVENUE	11,857.00	11,980.00	13,872.00	15,221.00	17,761.00
1. TAX ON INC., PROFITS, CAP. GAINS	9,974.00	9,853.00	11,412.00	12,551.00	13,457.00
1.1 INDIVIDUAL	207.00	288.00	398.00	451.00	675.00
1.2 CORPORATE	9,254.00	8,922.00	10,385.00	11,861.00	12,553.00
1.3 OTHER UNALLOC. TAX ON INC.	513.00	642.00	628.00	239.00	229.00
2. SOCIAL SECURITY CONTRIBUTIONS					
3. TAXES-PAYROLL OR MANPOWER					
4. TAXES ON PROPERTY	101.00	112.00	145.00	180.00	224.00
5. DOM. TAXES ON GOODS&SERV	1,079.00	1,328.00	1,603.00	1,751.00	3,271.00
5.1 GEN. SALES, TURNOVER OR V.A.T	534.00	708.00	830.00	878.00	2,327.00
5.2 EXCISES	545.00	620.00	773.00	873.00	944.00
5.3 PROFITS OF FISCAL MONOPOLIES					
5.4 OTHER TAXES ON GOODS & SERVS	0.00	0.00	0.00	0.00	0.00
6. TAXES-INTERNAT'L TRADE, TRANSAC	665.00	805.00	661.00	621.00	658.00
6.1 IMPORT DUTIES	536.00	522.00	557.00	530.00	607.00
6.2 EXPORT DUTIES	129.00	83.00	104.00	91.00	51.00
6.3 OTHER					
7. OTHER TAXES	33.00	41.00	43.00	64.00	99.00
ADJ. TO TAX REVENUE	5.00	21.00	8.00	54.00	52.00
C. NONTAX REVENUE	1,906.00	855.00	1,639.00	3,503.00	2,586.00
D. CAPITAL REVENUE					
TOTAL REVENUE	13,763.00	12,815.00	15,511.00	18,724.00	20,347.00
GDP	58,127.00	62,476.00	73,898.00	87,055.00	94,492.00
GDP DEFLATOR (1980=100)	118.50	124.60	141.00	157.80	169.90
POPULATION (MID-YEAR; MILLIONS)	149.70	153.04	156.45	159.89	163.39

SOURCE : GOVERNMENT FINANCE STATISTICS YEARBOOK
1977-86 FROM YEAR 1987 YEARBOOK
1975-76 FROM YEAR 1986 YEARBOOK
: BLANK () NO DATA

PHILIPPINES
STRUCTURE OF GOVERNMENT REVENUE
(MILLIONS OF PESOS : YEAR ENDING DECEMBER 31)

	1976	1977	1978	1979	1980
A. CURRENT REVENUE	17,877.00	19,767.00	23,701.00	28,091.00	34,149.00
B. TAX REVENUE	15,312.00	17,110.00	20,445.00	25,956.00	30,529.00
1. TAX ON INC., PROFITS, CAP. GAINS	3,735.00	4,503.00	5,111.00	6,140.00	7,210.00
1.1 INDIVIDUAL	1,852.00	2,679.00	3,202.00	3,250.00	3,383.00
1.2 CORPORATE	1,852.00	1,824.00	1,962.00	2,950.00	3,848.00
1.3 OTHER UNALLOC. TAX ON INC.	31.00		-53.00	-60.00	-21.00
2. SOCIAL SECURITY CONTRIBUTIONS					
3. TAXES-PAYROLL OR MANPOWER					
4. TAXES ON PROPERTY	154.00	195.00	531.00	228.00	225.00
5. DOM. TAXES ON GOODS&SERV	6,166.00	6,473.00	8,683.00	12,505.00	14,320.00
5.1 GEN. SALES, TURNOVER OR V. A. T	2,842.00	3,253.00	3,091.00	3,908.00	4,874.00
5.2 EXCISES	2,995.00	3,106.00	4,862.00	6,411.00	6,766.00
5.3 PROFITS OF FISCAL MONOPOLIES					
5.4 OTHER TAXES ON GOODS & SERVS	329.00	114.00	730.00	2,186.00	2,680.00
6. TAXES-INTERNAT'L TRADE, TRANSAC	4,959.00	5,463.00	5,599.00	6,652.00	8,261.00
6.1 IMPORT DUTIES	4,391.00	4,864.00	5,161.00	5,815.00	7,794.00
6.2 EXPORT DUTIES	568.00	599.00	438.00	737.00	425.00
6.3 OTHER TAX. ON INT. TR & TRANS					42.00
7. OTHER TAXES	298.00	476.00	274.00	434.00	498.00
UNCLASSIFIED TAX REVENUE INCLUDING REFUNDS			247.00	-3.00	15.00
C. NONTAX REVENUE	2,424.00	1,624.00	3,256.00	3,135.00	3,620.00
ADJ. TO CASH-CURRENT REVENUE	141.00	1,033.00			
D. CAPITAL REVENUE	18.00	15.00	125.00	4.00	2.00
TOTAL REVENUE	17,895.00	19,782.00	23,826.00	29,095.00	34,151.00
GDP	135,270.00	154,230.00	177,670.00	217,540.00	264,650.00
GDP DEFLATOR (1980=100)	64.00	88.70	75.10	86.50	100.00
POPULATION (MID-YEAR; MILLIONS)	43.41	44.58	45.78	47.04	48.32

SOURCE : GOVERNMENT FINANCE STATISTICS YEARBOOK

1976-85 FROM YEAR 1987 YEARBOOK

: BANK () NO DATA

PHILIPPINES
STRUCTURE OF GOVERNMENT REVENUE
(MILLIONS OF PESOS : YEAR ENDING DECEMBER 31)

	1981	1982	1983	1984	1985
A. CURRENT REVENUE	35,475.00	37,707.00	45,287.00	56,463.00	67,133.00
B. TAX REVENUE	31,425.00	33,785.00	39,598.00	49,974.00	59,747.00
1. TAX ON INC., PROFITS, CAP. GAINS	7,696.00	8,219.00	8,745.00	12,166.00	18,226.00
1.1 INDIVIDUAL	3,924.00	3,799.00	3,820.00	4,308.00	5,695.00
1.2 CORPORATE	3,899.00	4,503.00	4,894.00	7,175.00	9,362.00
1.3 OTHER UNALLOC. TAX ON INC.	-127.00	-83.00	31.00	683.00	3,169.00
2. SOCIAL SECURITY CONTRIBUTIONS					
3. TAXES-PAYROLL OR MANPOWER					
4. TAXES ON PROPERTY	358.00	319.00	338.00	454.00	546.00
5. DOM. TAXES ON GOODS & SERV	14,847.00	15,420.00	17,084.00	19,826.00	24,957.00
5.1 GEN. SALES, TURNOVER OR V.A.T	4,688.00	5,375.00	5,995.00	4,022.00	5,292.00
5.2 EXCISES	7,043.00	6,613.00	7,395.00	11,432.00	14,025.00
5.3 PROFITS OF FISCAL MONOPOLIES					
5.4 OTHER TAXES ON GOODS & SERV	3,118.00	3,432.00	3,694.00	4,372.00	5,640.00
6. TAXES-INTERNAT'L TRADE, TRANSAC	7,905.00	9,004.00	12,144.00	16,765.00	14,819.00
6.1 IMPORT DUTIES	7,548.00	8,653.00	11,805.00	14,296.00	13,522.00
6.2 EXPORT DUTIES	318.00	288.00	263.00	1,737.00	997.00
6.3 OTHER TAX. ON INT. TR & TRANS	41.00	63.00	76.00	732.00	300.00
7. OTHER TAXES	666.00	726.00	798.00	988.00	1,189.00
UNCLASSIFIED TAX REVENUE INCLUDING REFUNDS	-48.00	107.00	489.00	-205.00	10.00
C. NONTAX REVENUE	4,050.00	3,912.00	5,689.00	6,489.00	7,386.00
ADJ. TO CASH-CURRENT REVENUE					
D. CAPITAL REVENUE	3.00	3.00	3.00	4.00	3.00
TOTAL REVENUE	35,478.00	37,710.00	45,290.00	56,467.00	67,136.00
GDP	305,280.00	340,800.00	384,100.00	540,470.00	608,460.00
GDP DEFLATOR (1980=100)	111.00	120.30	134.30	210.30	236.90
POPULATION (MID-YEAR; MILLIONS)	49.54	50.78	52.06	53.35	54.67

SOURCE : GOVERNMENT FINANCE STATISTICS YEARBOOK
1976-85 FROM YEAR 1987 YEARBOOK
: BANK () NO DATA

THAILAND
STRUCTURE OF GOVERNMENT REVENUE
(MILLIONS OF BAHTS : YEAR ENDING SEPTEMBER 30)

ITEM	1976	1977	1978	1979	1980
A. CURRENT REVENUE	41,593.00	51,459.00	62,098.00	75,252.00	94,753.00
B. TAX REVENUE	37,366.00	46,842.00	56,931.00	69,159.00	87,071.00
1. TAX ON INC., PROFITS, CAP. GAINS	6,807.00	8,163.00	11,440.00	13,736.00	16,847.00
1.1 INDIVIDUAL	3,038.00	3,605.00	5,048.00	6,103.00	7,190.00
1.2 CORPORATE	3,769.00	4,558.00	6,392.00	7,633.00	9,657.00
1.3 OTHER UNALLOC. TAX ON INC.					
2. SOCIAL SECURITY CONTRIBUTIONS					
3. TAXES-PAYROLL OR MANPOWER					
4. TAXES ON PROPERTY	470.00	638.00	839.00	1,041.00	1,171.00
5. DOM. TAXES ON GOODS&SERV	18,448.00	24,207.00	28,248.00	34,605.00	43,650.00
5.1 GEN. SALES, TURNOVER OR V.A.T	8,901.00	10,979.00	13,112.00	14,818.00	17,488.00
5.2 EXCISES	7,859.00	9,708.00	10,724.00	14,401.00	18,338.00
5.3 PROFITS OF FISCAL MONOPOLIES	941.00	1,420.00	1,305.00	1,261.00	1,281.00
5.4 OTHER TAXES ON GOODS&SERVS	1,647.00	2,105.00	3,108.00	4,125.00	5,543.00
6. TAXES-INTERNAT'L TRADE, TRANSAC	10,380.00	13,504.00	15,858.00	19,259.00	24,829.00
6.1 IMPORT DUTIES	8,090.00	11,824.00	14,183.00	16,505.00	18,973.00
6.2 EXPORT DUTIES	1,290.00	1,680.00	1,775.00	2,754.00	5,858.00
6.3 OTHER TAX ON INT. TR&TRANS	0.00	0.00	0.00	0.00	0.00
7. OTHER TAXES	261.00	326.00	445.00	518.00	574.00
C. NONTAX REVENUE	4,227.00	4,617.00	5,167.00	6,093.00	7,682.00
ADJ. TO NONTAX REVENUE	-523.00	-109.00	13.00	14.00	-21.00
D. CAPITAL REVENUE	530.00	14.00	7.00	4.00	9.00
TOTAL REVENUE	42,123.00	51,473.00	62,105.00	75,256.00	94,762.00
GDP	337,630.00	393,030.00	469,950.00	556,240.00	684,930.00
GDP DEFLATOR (1980=100)	65.30	70.90	77.00	85.90	100.00
POPULATION (MID-YEAR; MILLIONS)	42.96	44.04	45.10	46.14	46.50

SOURCE : GOVERNMENT FINANCE STATISTICS YEARBOOK

1977-85 FROM YEAR 1987 YEARBOOK

1976 FROM YEAR 1986 YEARBOOK

: BLANK () NO DATA

THAILAND
STRUCTURE OF GOVERNMENT REVENUE
(MILLIONS OF BAHTS : YEAR ENDING SEPTEMBER 30)

ITEM	1981	1982	1983	1984	1985
A. CURRENT REVENUE	113,322.00	117,958.00	142,847.00	153,113.00	162,602.00
B. TAX REVENUE	102,473.00	106,339.00	130,224.00	138,385.00	144,483.00
1. TAX ON INC., PROFITS, CAP. GAINS	21,581.00	24,435.00	26,706.00	31,101.00	33,708.00
1.1 INDIVIDUAL	8,484.00	11,430.00	13,787.00	16,716.00	19,197.00
1.2 CORPORATE	13,097.00	13,005.00	12,939.00	14,385.00	14,511.00
1.3 OTHER UNALLOC. TAX ON INC.					
2. SOCIAL SECURITY CONTRIBUTIONS					
3. TAXES-PAYROLL OR MANPOWER					
4. TAXES ON PROPERTY	1,324.00	1,431.00	1,964.00	2,084.00	2,152.00
5. DOM. TAXES ON GOODS&SERV	51,823.00	56,117.00	71,397.00	70,645.00	71,390.00
5.1 GEN. SALES, TURNOVER OR V.A.T	21,113.00	22,077.00	24,593.00	29,447.00	29,636.00
5.2 EXCISES	24,572.00	28,811.00	36,931.00	36,736.00	35,639.00
5.3 PROFITS OF FISCAL MONOPOLIES	1,371.00	291.00	1,075.00	1,041.00	761.00
5.4 OTHER TAXES ON GOODS&SERV	4,767.00	4,938.00	8,798.00	3,421.00	5,334.00
6. TAXES-INTERNAT'L TRADE, TRANSAC	27,108.00	23,632.00	29,227.00	34,471.00	36,112.00
6.1 IMPORT DUTIES	21,876.00	19,826.00	25,551.00	30,675.00	33,077.00
6.2 EXPORT DUTIES	5,152.00	3,806.00	3,676.00	3,443.00	2,615.00
6.3 OTHER TAX ON INT. TR&TRANS	80.00	0.00	0.00	353.00	420.00
7. OTHER TAXES	637.00	724.00	930.00	1,084.00	1,121.00
C. NONTAX REVENUE	10,849.00	11,619.00	12,623.00	13,728.00	16,119.00
ADJ. TO NONTAX REVENUE	146.00	25.00	36.00	220.00	-323.00
D. CAPITAL REVENUE	12.00	11.00	12.00	12.00	14.00
TOTAL REVENUE	113,334.00	117,969.00	142,859.00	153,125.00	162,616.00
GDP	786,170.00	846,130.00	924,210.00	988,860.00	1,041,350.00
GDP DEFLATOR (1980=100)	108.00	111.80	115.10	116.70	119.10
POPULATION (MID-YEAR;MILLIONS)	47.49	48.49	49.46	50.40	51.30

SOURCE : GOVERNMENT FINANCE STATISTICS YEARBOOK
1977-85 FROM YEAR 1987 YEARBOOK
1976 FROM YEAR 1986 YEARBOOK
: BLANK () NO DATA

MALAYSIA
STRUCTURE OF GOVERNMENT REVENUE
(MILLIONS OF RINGGIT : YEAR ENDING DECEMBER 31)

	1976	1977	1978	1979	1980
A. CURRENT REVENUE	6,115.00	7,763.00	8,793.00	10,433.00	14,012.00
B. TAX REVENUE	5,481.00	7,024.00	8,049.00	9,426.00	12,540.00
1. TAX ON INC., PROFITS, CAP. GAINS	2,081.00	2,790.00	3,170.00	3,682.00	5,259.00
1.1 INDIVIDUAL	500.00	679.00	776.00	1,128.00	983.00
1.2 CORPORATE	1,580.00	2,110.00	2,391.00	2,550.00	4,275.00
1.3 OTHER UNALLOC. TAX ON INC.	1.00	1.00	3.00	4.00	1.00
2. SOCIAL SECURITY CONTRIBUTIONS	26.00	31.00	35.00	44.00	55.00
3. TAXES-PAYROLL OR MANPOWER					
4. TAXES ON PROPERTY	32.00	49.00	37.00	41.00	64.00
5. DOM. TAXES ON GOODS&SERV	1,306.00	1,555.00	1,916.00	2,087.00	2,352.00
5.1 GEN. SALES, TURNOVER OR V.A.T	322.00	383.00	458.00	544.00	698.00
5.2 EXCISES	550.00	695.00	903.00	958.00	973.00
5.3 PROFITS OF FISCAL MONOPOLIES					
5.4 OTHER TAXES ON GOODS & SERVS	434.00	477.00	555.00	585.00	683.00
6. TAXES-INTERNAT'L TRADE, TRANSAC	1,996.00	2,531.00	2,797.00	3,453.00	4,628.00
6.1 IMPORT DUTIES	876.00	1,141.00	1,334.00	1,514.00	2,071.00
6.2 EXPORT DUTIES	1,010.00	1,390.00	1,463.00	1,939.00	2,557.00
6.3 OTHER TAX. ON INT. TR & TRANS	10.00	0.00	0.00	0.00	0.00
7. OTHER TAXES	60.00	58.00	94.00	119.00	182.00
C. NONTAX REVENUE	634.00	739.00	744.00	1,007.00	1,472.00
D. CAPITAL REVENUE	13.00	28.00	11.00	30.00	37.00
TOTAL REVENUE	6,128.00	7,791.00	8,804.00	10,483.00	14,048.00
GDP	28,085.00	32,340.00	37,886.00	46,424.00	53,308.00
GDP DEFLATOR (1980=100)	71.00	75.90	83.50	93.60	100.00
POPULATION (MID-YEAR;MILLIONS)	12.30	12.58	12.91	13.45	13.76

SOURCE : GOVERNMENT FINANCE STATISTICS YEARBOOK

1978-85 FROM YEAR 1987 YEARBOOK

1976-77 FROM YEAR 1983 YEARBOOK

: BLANK () : NO DATA

MALAYSIA
STRUCTURE OF GOVERNMENT REVENUE
(MILLIONS OF RINGGIT : YEAR ENDING DECEMBER 31)

	1981	1982	1983	1984	1985
A. CURRENT REVENUE	15,775.00	16,583.00	18,534.00	20,473.00	20,773.00
B. TAX REVENUE	13,087.00	13,225.00	15,985.00	17,131.00	17,409.00
1. TAX ON INC., PROFITS, CAP. GAINS	5,822.00	6,055.00	7,268.00	7,982.00	8,806.00
1.1 INDIVIDUAL	1,087.00	1,380.00	1,814.00	1,975.00	1,749.00
1.2 CORPORATE	4,734.00	4,694.00	5,453.00	6,007.00	7,059.00
1.3 OTHER UNALLOC. TAX ON INC.	1.00	1.00	1.00		
2. SOCIAL SECURITY CONTRIBUTIONS	81.00	93.00	99.00	106.00	124.00
3. TAXES-PAYROLL OR MANPOWER					
4. TAXES ON PROPERTY	81.00	95.00	101.00	88.00	88.00
5. DOM. TAXES ON GOODS&SERV	2,436.00	2,700.00	3,699.00	3,795.00	3,692.00
5.1 GEN. SALES, TURNOVER OR V.A.T	730.00	798.00	1,284.00	1,320.00	1,233.00
5.2 EXCISES	967.00	1,024.00	1,361.00	1,461.00	1,376.00
5.3 PROFITS OF FISCAL MONOPOLIES					
5.4 OTHER TAXES ON GOODS & SERVS	739.00	878.00	1,054.00	1,014.00	1,083.00
6. TAXES-INTERNAT'L TRADE, TRANSAC	4,471.00	4,034.00	4,480.00	4,788.00	4,357.00
6.1 IMPORT DUTIES	2,246.00	2,315.00	2,591.00	2,698.00	2,518.00
6.2 EXPORT DUTIES	2,225.00	1,719.00	1,889.00	2,090.00	1,839.00
6.3 OTHER TAX. ON INT. TR & TRANS	0.00	0.00	0.00	0.00	0.00
7. OTHER TAXES	206.00	248.00	338.00	372.00	340.00
C. NONTAX REVENUE	2,678.00	3,358.00	2,549.00	3,342.00	3,364.00
D. CAPITAL REVENUE	61.00	33.00	39.00	38.00	105.00
TOTAL REVENUE	15,836.00	16,616.00	18,573.00	20,511.00	20,878.00
GDP	57,613.00	62,579.00	69,585.00	78,550.00	77,547.00
GDP DEFLATOR (1980=100)	101.10	103.60	108.40	115.00	113.30
POPULATION (MID-YEAR; MILLIONS)	14.10	14.46	14.82	15.19	15.68

SOURCE : GOVERNMENT FINANCE STATISTICS YEARBOOK

1978-85 FROM YEAR 1987 YEARBOOK

1978-77 FROM YEAR 1983 YEARBOOK

: BLANK () NO DATA

KOREA
STRUCTURE OF GOVERNMENT REVENUE
(BILLIONS OF WON : YEAR ENDING DECEMBER 31)

	1976	1977	1978	1979	1980
A. CURRENT REVENUE	2,312.0	2,838.2	4,084.0	5,376.0	6,738.0
B. TAX REVENUE	2,116.6	2,656.9	3,702.0	4,837.0	5,898.0
1. TAX ON INC., PROFITS, CAP. GAINS	603.1	735.8	1,043.0	1,381.0	1,504.0
1.1 INDIVIDUAL	364.4	403.6	538.0	708.0	766.0
1.2 CORPORATE	238.6	331.7	505.0	673.0	738.0
1.3 OTHER UNALLOC. TAX ON INC.	0.1	0.5			
2. SOCIAL SECURITY CONTRIBUTIONS	19.8	27.7	41.0	59.0	73.0
3. TAXES-PAYROLL OR MANPOWER		0.9	1.0	4.0	
4. TAXES ON PROPERTY	66.1	20.0	17.0	21.0	37.0
5. DOM. TAXES ON GOODS&SERV	994.9	1,309.7	1,751.0	2,355.0	3,093.0
5.1 GEN. SALES, TURNOVER OR V.A.T	261.4	448.4	638.0	1,089.0	1,471.0
5.2 EXCISES	498.4	562.3	595.0	854.0	1,029.0
5.3 PROFITS OF FISCAL MONOPOLIES	178.0	220.0	280.0	360.0	510.0
5.4 OTHER TAXES ON GOODS & SERVS	57.1	78.0	38.0	52.0	83.0
6. TAXES-INTERNAT'L TRADE, TRANSAC	343.9	475.0	775.0	913.0	1,014.0
6.1 IMPORT DUTIES	343.9	475.0	775.0	913.0	1,014.0
6.2 EXPORT DUTIES					
6.3 OTHER TAX, ON INT. TR & TRANS					
7. OTHER TAXES	14.6	19.3	25.0	37.0	34.0
UNALLOCABLE TAX REVENUE	74.2	68.5	48.0		
C. NONTAX REVENUE	195.4	281.3	382.0	539.0	840.0
D. CAPITAL REVENUE	12.9	20.2	24.0	70.0	96.0
TOTAL REVENUE	2,324.9	2,858.4	4,108.0	5,446.0	6,834.0
GDP	13,996.00	17,985.00	24,243.00	31,224.00	37,915.00
GDP DEFLATOR (1980=100)	47.00	55.00	67.00	80.00	100.00
POPULATION (MID-YEAR; MILLIONS)	35.85	36.41	36.97	37.53	38.12

SOURCE : GOVERNMENT FINANCE STATISTICS YEARBOOK

1978-85 FROM YEAR 1987 YEARBOOK

1976-77 FROM YEAR 1983 YEARBOOK

: BLANK () NO DATA

KOREA
STRUCTURE OF GOVERNMENT REVENUE
(BILLIONS OF WON : YEAR ENDING DECEMBER 31)

	1981	1982	1983	1984	1985
A. CURRENT REVENUE	8,534.0	9,875.0	11,418.0	12,511.0	13,738.0
B. TAX REVENUE	7,365.0	8,528.0	10,208.0	11,078.0	12,104.0
1. TAX ON INC., PROFITS, CAP. GAINS	1,958.0	2,357.0	2,808.0	2,867.0	3,474.0
1.1 INDIVIDUAL	1,024.0	1,230.0	1,404.0	1,522.0	1,845.0
1.2 CORPORATE	934.0	1,127.0	1,205.0	1,345.0	1,629.0
1.3 OTHER UNALLOC. TAX ON INC.					
2. SOCIAL SECURITY CONTRIBUTIONS	87.0	110.0	131.0	158.0	207.0
3. TAXES-PAYROLL OR MANPOWER					
4. TAXES ON PROPERTY	77.0	105.0	108.0	98.0	81.0
5. DOM. TAXES ON GOODS&SERV	3,814.0	4,385.0	5,221.0	5,629.0	5,934.0
5.1 GEN.SALES, TURNOVER OR V.A.T	1,805.0	2,094.0	2,559.0	2,704.0	2,901.0
5.2 EXCISES	1,218.0	1,289.0	1,518.0	1,705.0	1,805.0
5.3 PROFITS OF FISCAL MONOPOLIES	680.0	843.0	939.0	963.0	950.0
5.4 OTHER TAXES ON GOODS & SERVS	111.0	169.0	207.0	257.0	278.0
6. TAXES-INTERNAT'L TRADE, TRANSAC	1,189.0	1,317.0	1,789.0	1,921.0	1,950.0
6.1 IMPORT DUTIES	1,189.0	1,317.0	1,789.0	1,921.0	1,950.0
6.2 EXPORT DUTIES					
6.3 OTHER TAX, ON INT.TR &TRANS					
7. OTHER TAXES	49.0	54.0	64.0	69.0	75.0
UNALLOCABLE TAX REVENUE					
C. NONTAX REVENUE	1,169.0	1,346.0	1,210.0	1,433.0	1,634.0
D. CAPITAL REVENUE	71.0	108.0	120.0	93.0	185.0
TOTAL REVENUE	8,605.0	9,883.0	11,538.0	12,604.0	13,923.0
GDP	47,024.00	52,813.00	61,003.00	68,867.00	75,511.00
GDP DEFLATOR (1980=100)	115.00	123.00	128.00	133.00	138.00
POPULATION (MID-YEAR;MILLIONS)	38.72	39.33	39.93	40.51	41.08

SOURCE : GOVERNMENT FINANCE STATISTICS YEARBOOK

1978-85 FROM YEAR 1987 YEARBOOK

1976-77 FROM YEAR 1983 YEARBOOK

: BLANK () NO DATA

SINGAPORE
STRUCTURE OF GOVERNMENT REVENUE
(MILLIONS OF DOLLARS : YEAR BEGINNING APRIL 1)

	1976	1977	1978	1979	1980
A. CURRENT REVENUE	3,342.00	3,893.00	4,195.00	4,887.00	6,365.00
B. TAX REVENUE	2,400.00	2,735.00	2,922.00	3,391.00	4,396.00
1. TAX ON INC., PROFITS, CAP. GAINS	1,143.00	1,320.00	1,301.00	1,415.00	2,068.00
1.1 INDIVIDUAL					
1.2 CORPORATE					
1.3 OTHER UNALLOC. TAX ON INC.					
2. SOCIAL SECURITY CONTRIBUTIONS					
3. TAXES-PAYROLL OR MANPOWER	61.00	70.00	79.00	92.00	114.00
4. TAXES ON PROPERTY	375.00	373.00	449.00	551.00	586.00
5. DOM. TAXES ON GOODS&SERV	491.00	598.00	664.00	823.00	1,005.00
5.1 GEN. SALES, TURNOVER OR V. A. T					
5.2 EXCISES	238.00	256.00	269.00	303.00	358.00
5.3 PROFITS OF FISCAL MONOPOLIES					
5.4 OTHER TAXES ON GOODS & SERVS.	253.00	342.00	395.00	520.00	647.00
6. TAXES-INTERNAT'L TRADE, TRANSAC	273.00	313.00	340.00	394.00	437.00
6.1 IMPORT DUTIES	273.00	313.00	340.00	394.00	437.00
6.2 EXPORT DUTIES					
6.3 OTHER TAX. ON INT. TR & TRANS	0.00	0.00	0.00	0.00	0.00
7. OTHER TAXES	57.00	61.00	88.00	116.00	186.00
C. NONTAX REVENUE	942.00	1,158.00	1,273.00	1,496.00	1,968.00
D. CAPITAL REVENUE	155.00	97.00	52.00	294.00	255.00
TOTAL REVENUE	3,497.00	3,990.00	4,247.00	5,181.00	6,620.00
GDP	14,651.00	16,039.00	17,830.00	20,523.00	25,091.00
GDP DEFLATOR (1980=100)	82.60	83.80	85.80	90.30	100.00
POPULATION (MID-YEAR; MILLIONS)	2.29	2.33	2.35	2.38	2.41

SOURCE : GOVERNMENT FINANCE STATISTICS YEARBOOK

1976-85 FROM YEAR 1987 YEARBOOK

: BANK () NO DATA

SINGAPORE
STRUCTURE OF GOVERNMENT REVENUE
(MILLIONS OF DOLLARS : YEAR BEGINNING APRIL 1)

	1981	1982	1983	1984	1985
A. CURRENT REVENUE	7,797.00	9,054.00	10,835.00	11,451.00	10,768.00
B. TAX REVENUE	5,427.00	6,428.00	7,140.00	7,371.00	6,400.00
1. TAX ON INC., PROFITS, CAP. GAINS	2,732.00	3,327.00	3,563.00	3,452.00	2,903.00
1.1 INDIVIDUAL					
1.2 CORPORATE					
1.3 OTHER UNALLOC. TAX ON INC.					
2. SOCIAL SECURITY CONTRIBUTIONS					
3. TAXES-PAYROLL OR MANPOWER	140.00	164.00	188.00	204.00	239.00
4. TAXES ON PROPERTY	767.00	901.00	1,105.00	1,298.00	1,052.00
5. DOM. TAXES ON GOODS&SERV	1,078.00	1,287.00	1,464.00	1,599.00	1,484.00
5.1 GEN.SALES, TURNOVER OR V.A.T					
5.2 EXCISES	387.00	438.00	528.00	651.00	600.00
5.3 PROFITS OF FISCAL MONOPOLIES					
5.4 OTHER TAXES ON GOODS & SERVS.	691.00	849.00	936.00	948.00	884.00
6. TAXES-INTERNAT'L TRADE, TRANSAC	429.00	488.00	516.00	522.00	391.00
6.1 IMPORT DUTIES	429.00	488.00	516.00	522.00	391.00
6.2 EXPORT DUTIES					
6.3 OTHER TAX. ON INT.TR & TRANS	0.00	0.00	0.00	0.00	0.00
7. OTHER TAXES	281.00	261.00	304.00	296.00	331.00
C. NONTAX REVENUE	2,370.00	2,626.00	3,795.00	4,080.00	4,368.00
D. CAPITAL REVENUE	899.00	1,032.00	782.00	246.00	3,886.00
TOTAL REVENUE	8,696.00	10,086.00	11,717.00	11,897.00	14,764.00
GDP	29,339.00	32,670.00	36,733.00	40,048.00	38,521.00
GDP DEFLATOR (1980=100)	106.40	111.40	116.00	116.80	114.50
POPULATION (MID-YEAR;MILLIONS)	2.44	2.47	2.50	2.52	2.58

SOURCE : GOVERNMENT FINANCE STATISTICS YEARBOOK
1976-85 FROM YEAR 1987 YEARBOOK
: BANK () NO DATA