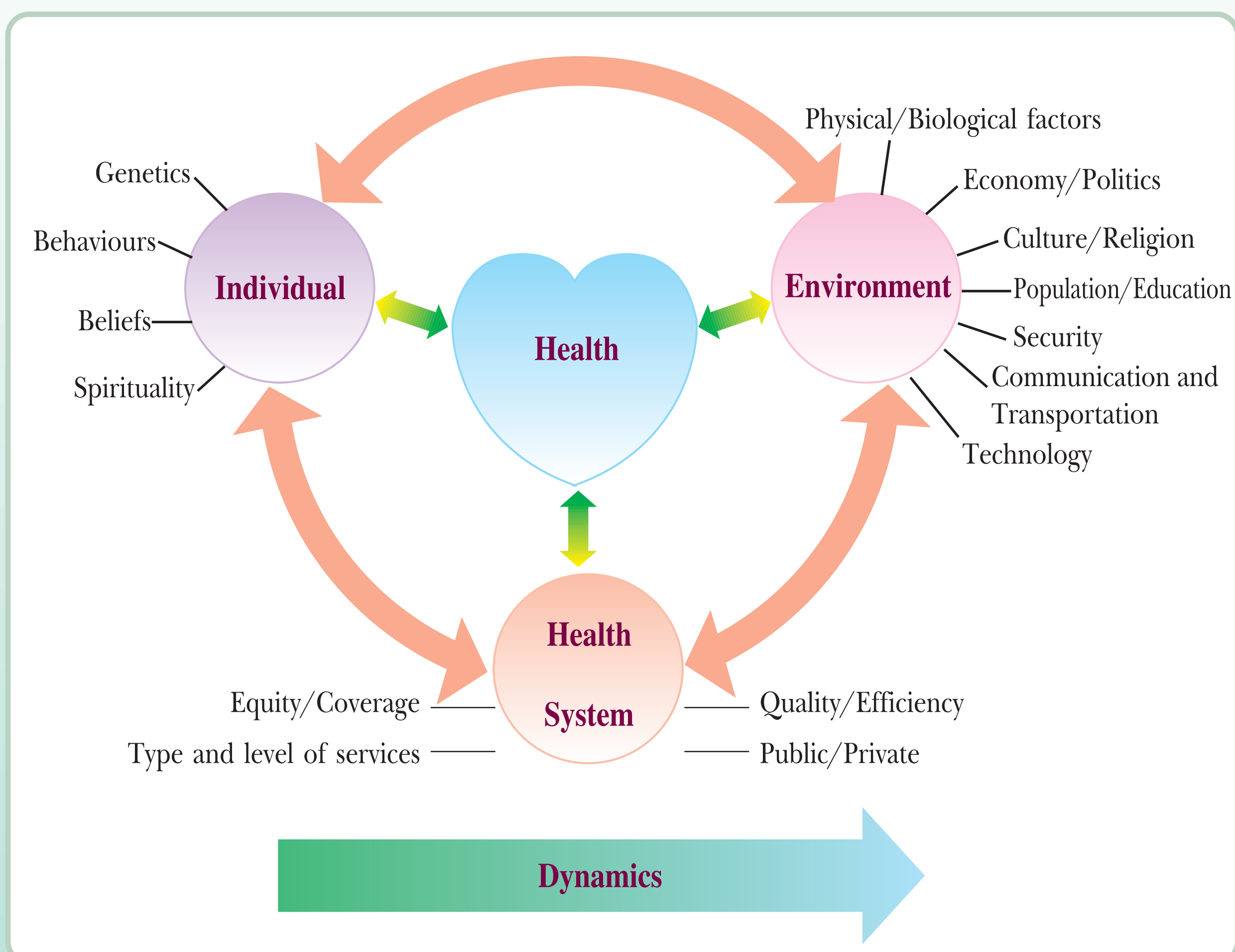
CHAPTER 4
Situations and Trends of Health Determinants

As health becomes more complex due to its association with numerous factors, Thailand's health situations and trends require a wider range of analysis and synthesis of changes in individual and environmental factors of all dimensions that determine health problems as well as the health services system (Figure 4.1).

Figure 4.1 Health Linkage and Dynamics



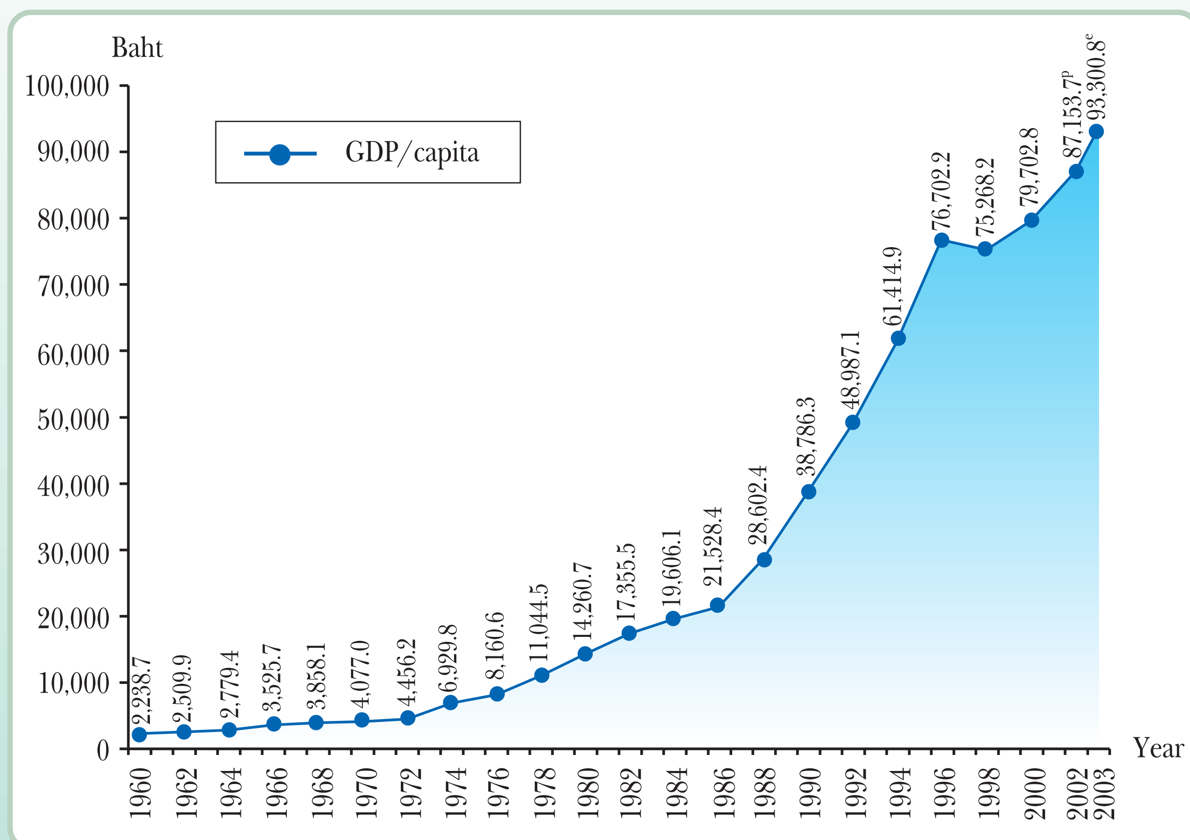
1. Economic Situations and Trends

1.1 Economic Growth

Over the past three decades, the average annual economic growth was higher than 7% and before 1997 the gross domestic product (GDP) per capita increased 28-fold, in particular after 1986 (Figure 4.2). Such a rapid economic growth resulted in a decline in poverty, as evidenced in the drop in the proportion of the indigent from 57% in 1962 to 17.0% in 1996.

In 1997, Thailand experienced a serious economic crisis, resulting in a sharp decline in the annual economic growth from 7% before the crisis to -1.7% in 1997 and -10.8% in 1998 (Figure 4.4). The crisis drastically affected the GDP per capita (Figure 4.2). Moreover, the devaluation of the baht against US dollars has resulted in a greater decline in the exchange rates and GDP per capita in dollar terms (Figure 4.3). Simultaneously, the proportion of the poor has climbed from 17.0% in 1996 to 21.3% in 2000 (Figure 4.5). As the economic recovery began in 2002, the proportion of people living under the poverty line has dropped steadily to 15.5% in that year (Figure 4.5).

Figure 4.2 Gross Domestic Product per Capita, 1960-2003 (Market Prices)

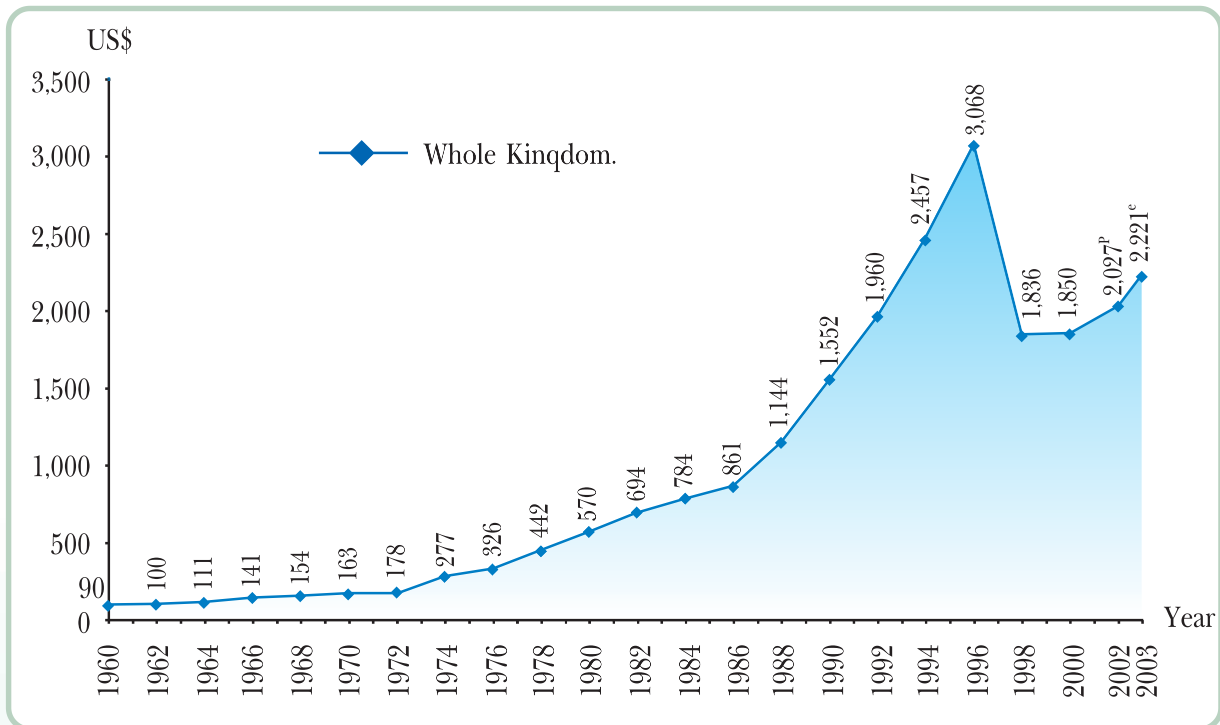


Source: Office of the National Economic and Social Development Board (NESDB).

Notes: 1. [P] Preliminary figure; [e] estimated figure.

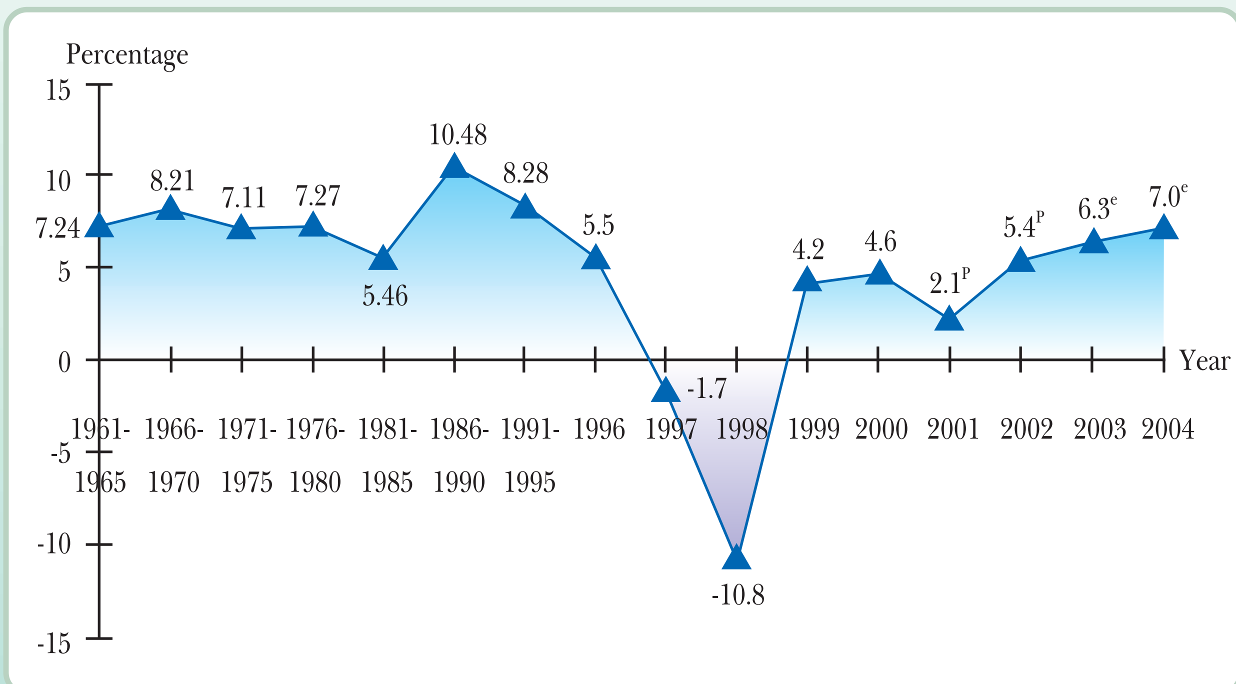
2. Since 1994, the data on GDP have been adjusted.

Figure 4.3 Gross Domestic Product per Capita in US Dollars, 1960-2003



Source: Office of the National Economic and Social Development Board.

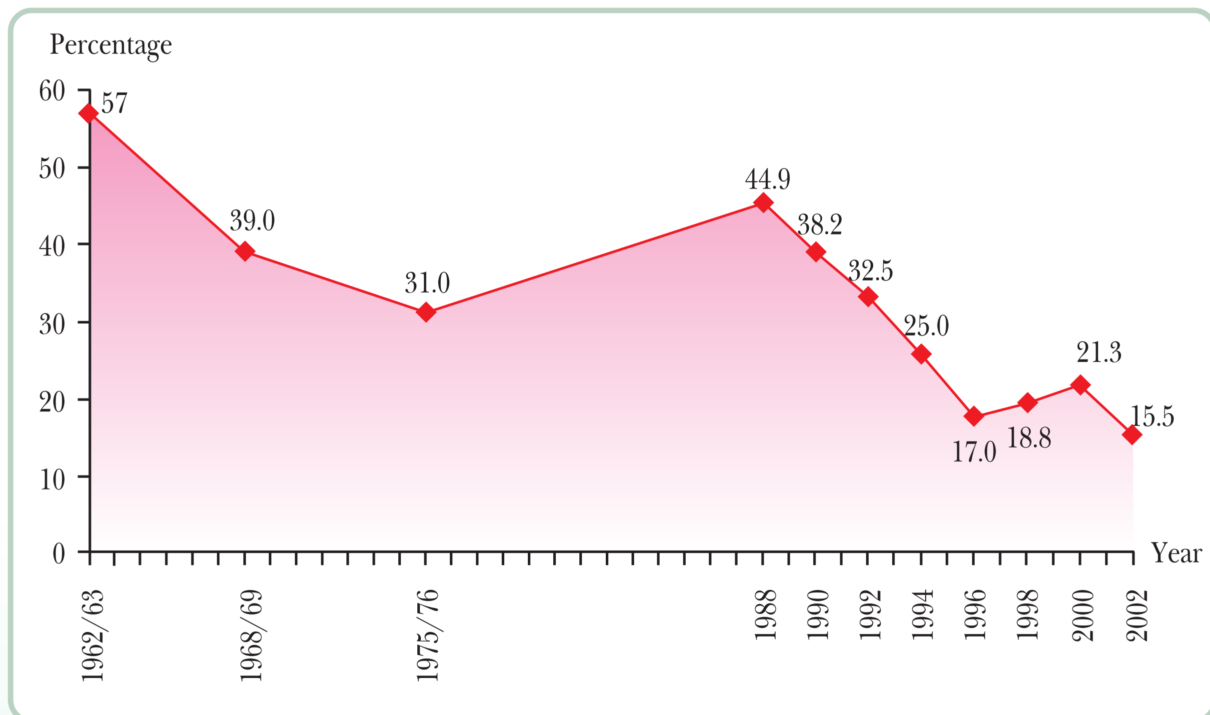
Figure 4.4 Economic Growth Rate in Thailand, 1961-2004



Source: Office of the National Economic and Social Development Board.

Notes: [P] Preliminary figure; [e] estimated figure

Figure 4.5 Proportion of People Living below Poverty Line in Thailand, 1962-2002



Sources: Data for 1962/63-1975/76 were derived from Ouay Meesook. Income, Consumption and Poverty in Thailand, 1962/63 to 1975/76.

Data for 1988-2002 were derived from the Household Socio-Economic Survey of the National Statistical Office(NSO), analyzed by the Bureau of Economic Development and Income Distribution, Office of the National Economic and Social Development Board.

Notes:
1. The study on poverty in each period had a different assumption.
2. As a result of the revision of the poverty line computation method for the period 1988-2002, the poverty level is higher.

The 1997 economic downturn mainly resulted from an infrastructure drawback and its influential determinants, which were not efficiently managed; and there were no suitable measures to cope with such problems. Major determinants included large amounts of short-term foreign debts, private sector investments in non-productive businesses (particularly in the real estate sector, automobile industries, petrochemical industries and **private hospitals**), weak production structure and foreign capital dependence, liberalized monetary policy without any effective monitoring and inspection system, including inefficiency of the public sector management system.

To maintain overall economic stability, Thailand adopted the managed float exchange rate system on **2 July 1997** and requested financial and technical assistance from the International Monetary Fund (IMF) on **14 August 1997.** That was the beginning of the financial crisis, which rapidly affected neighbouring countries and other regions due to globalization effects. Since the economic crisis, Thailand has adopted measures for stabilizing exchange rates, maintaining the optimum interest and inflation rates, and pursuing active fiscal policy and financing measures for liquidity problem alleviation, such as budgeting measures, cost-cutting and spending control measures, etc. These measures, therefore, resulted in economy recovery, i.e. in 1999 the economic growth was recorded at 4.2%, and slowed down to 2.1% in 2001, but rose again to 5.4% and 6.3% in 2002 and 2003, respectively. Such growth resulted from three major driving forces: the implementation of

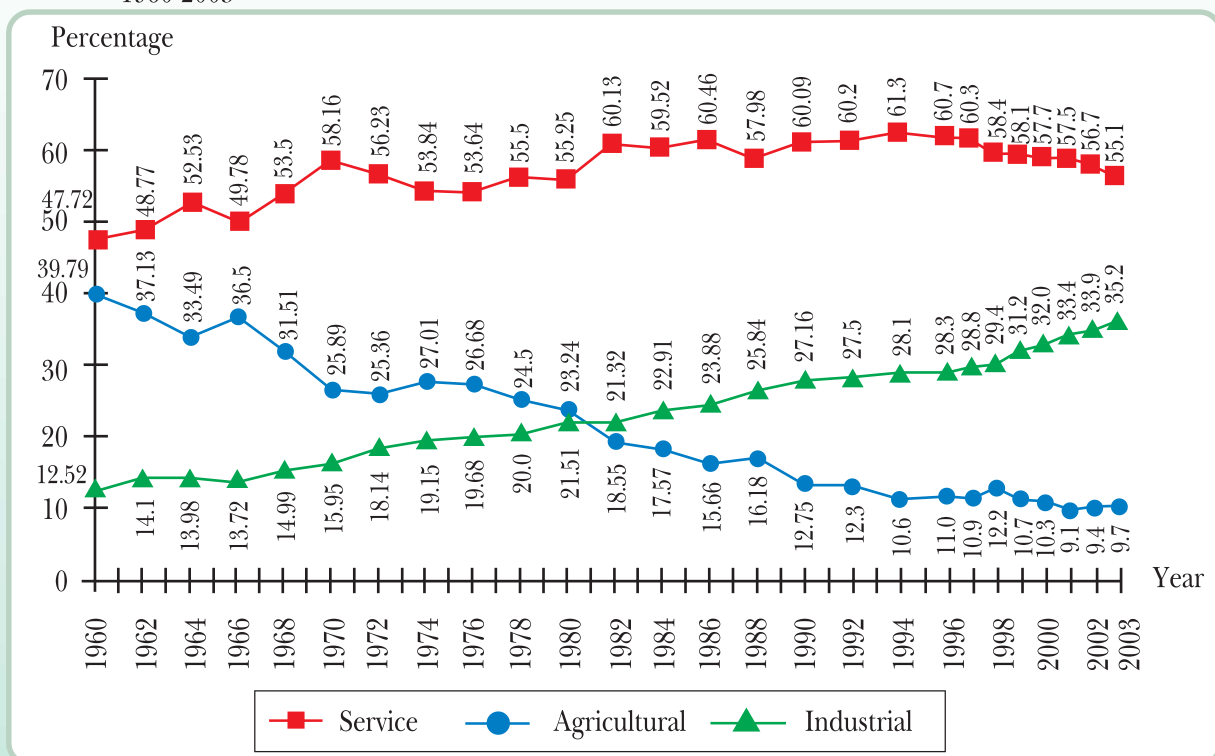
domestic economic stimulus policy and measures, grassroots-level financial support for enhancing the potential and opportunity of the poor, and increased exports. The National Economic and Social Development Board has projected that Thailand's economy will continue to grow at 7.0% in 2004 (Figure 4.4).

1.2 Economic Structure

The Thai economic structure has been transformed in the industrial and service sectors more than in the agricultural sector (Figure 4.6). It is noted that since 1990 until the 1997 crisis, the production structure of the agricultural, industrial and service sectors had almost never changed.

As a result of the economic crisis, a severe shrinkage of the industrial sector led to a greater mobilization of labour force to the agricultural sector, i.e. the expansion rate in the agricultural sector dropped by 3.2% only, while that in the industrial sector declined by 11.1% in 1998. But in 1999-2000, there was a recovery sign of the agricultural and industrial sectors as seen from the expansion rates of 2.0-4.9% and 6-12.3% in the two sectors, respectively. For 2003, the agricultural sector growth rose by 10.3%, whereas that for the industrial sector rose by 6.8%.

Figure 4.6 Proportion of Economy in the Agricultural, Industrial and Service Sectors, as a Percentage of GDP, 1960-2003



Source: National Income of Thailand, 4th Quarter (4/2003). Office of the National Economic and Social Development Board.

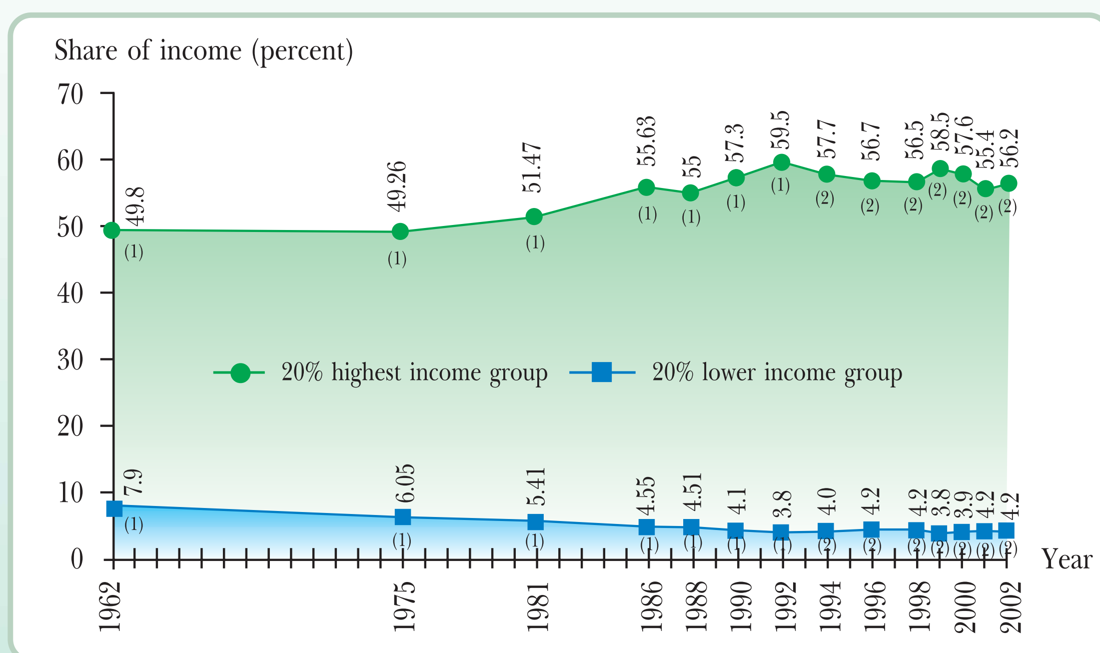
1.3 Income Distribution and Poverty

Although the Thai economy is expanding, the gap between the rich and the poor is widening. In 1962, the highest income group (one-fifth of the entire population) had a 49.8% share of the national income. Such a share rose to 56.7% in 1996, while the lowest income group (one-fifth of the entire population) had a national income share of only 7.9% in 1962, falling to 4.2% in 1996 (Figure 4.7). The income distribution was slightly better during 1994-1996.

During the economic crisis, the income distribution became more inequitable. The 20% lowest income group had their income proportion declining from 4.2% in 1996 to 3.9% in 2000, while the 20% highest income group had their income proportion rising from 56.7% to 57.6% during the same period. But in 2001-2002, the trend of income distribution improved slightly (Figure 4.7). The income disparity between the richest and the poorest groups dropped from 14.8-fold in 2000 to 13.4-fold in 2002. Regarding poverty, even though the proportion of poor people dropped steadily, such a proportion in the rural areas is 3 times greater than that in the urban areas (Table 4.1). It was evident that most of the indigent people were farmers and farm workers. The rising proportion of the indigent in Thailand was however lower than that of other Southeast Asian countries (Table 4.2). Nonetheless, in terms of income distribution inequalities, Thailand's is higher than those in many other countries in Southeast Asia (Table 4.3).

As a result of the economic crisis, the people's income reduced, especially in the low-income groups. But after the economic recovery in 2002, the rate of income growth in the low-income group was higher than that among the high-income group (Report on National Economic and Social Development: Two Years of Changes. NESDB, 2003).

Figure 4.7 Share of Income of Thai People, Classified into 5 Groups by Income Level



	Year													
	1962	1975	1981	1986	1988	1990	1992	1994	1996	1998	1999	2000	2001	2002
20% lowest income group	7.9	6.05	5.41	4.55	4.51	4.1	3.8	4.0	4.2	4.2	3.8	3.9	4.2	4.2
20% highest income group	49.8	49.26	51.47	55.63	55.0	57.3	59.5	57.7	56.7	56.5	58.5	57.6	55.4	56.2
Income disparity value	6.3	8.1	9.5	12.2	12.2	14.0	15.6	14.4	13.5	13.5	15.4	14.8	13.2	13.4

Sources: (1) Data for 1962-1992 were derived from NESDB and TDRI.

(2) Data for 1994-2002 were derived from the Household Socio-Economic Survey of the National Statistical Office, analyzed by the Bureau of Development Evaluation and Dissemination, Office of the National Economic and Social Development Board.

Table 4.1 Proportion of Population Living below Poverty Line by Locality, 1962-2002

Year	Urban area	Rural area	Whole country
1962/63	38	61	57
1968/69	16	43	39
1975/76	14	35	31
1988	25.2	52.9	44.9
1990	21.4	45.2	38.2
1992	14.1	40.3	32.5
1994	11.7	30.7	25.0
1996	7.3	21.3	17.0
1998	7.5	23.7	18.8
2000	8.7	27.0	21.3
2002	6.7	19.7	15.5

Sources: Data for 1962/63-1975/76 were derived from Oey Meesook. Income, Consumption and Poverty in Thailand, 1962/63 to 1975/76.

Data for 1988-2002 were derived from the Report on Household Socio-Economic Surveys of the National Statistical Office, analyzed by the Bureau of Development Evaluation and Dissemination, Office of the National Economic and Social Development Board.

Note: For 1988-2002, the proportion of people with poverty was higher due to changes in the computation method.

Table 4.2 Thailand's Proportion of Population Living below Poverty Line Compared to Those in Other Southeast Asian Countries

Country	Poverty proportion (percent)			
	Year of survey	Based on each country's definition of poverty	Year of survey	Based on PPP of <$1/day
Cambodia	1999	35.9	2000	34
Indonesia	2002	18.2	2000	8.0
Laos	1998	46.0	2000	31.5
Malaysia	1999	8.1	2000	0.0
Philippines	2000	34.2	2000	12.7
Thailand	2000	14.2	2000	3.5
Vietnam	1998	37.0	2000	9.1

Sources:
1. Data on proportion of population living below poverty line for each country were derived from "Key Indicators 2003": Education for Global Participation. Asian Development Bank, 2003.
2. Data on proportion of population with an income of less than US$ 1 per day (PPP) were derived from "Situation and Data on Poverty". Office of the National Economic and Social Development Board.

Note: Purchasing power parity (PPP) is the adjustment of purchasing potential so that each country has an equal purchasing power.

Table 4.3 Income Share of the Population in Southeast Asian Countries, 2000

Country	20% highest income group	20% lowest income group	Discrepancy (times)
Thailand	57.6	3.9	14.8
Singapore	48.9	5.1	9.6
Malaysia	54.3	4.4	12.3
Indonesia	41.1	9.0	4.6
Philippines	52.3	5.4	9.7

Source: IMD. The World Competitiveness Yearbook, 2003.

1.4 Global and Regional Economic Cooperation

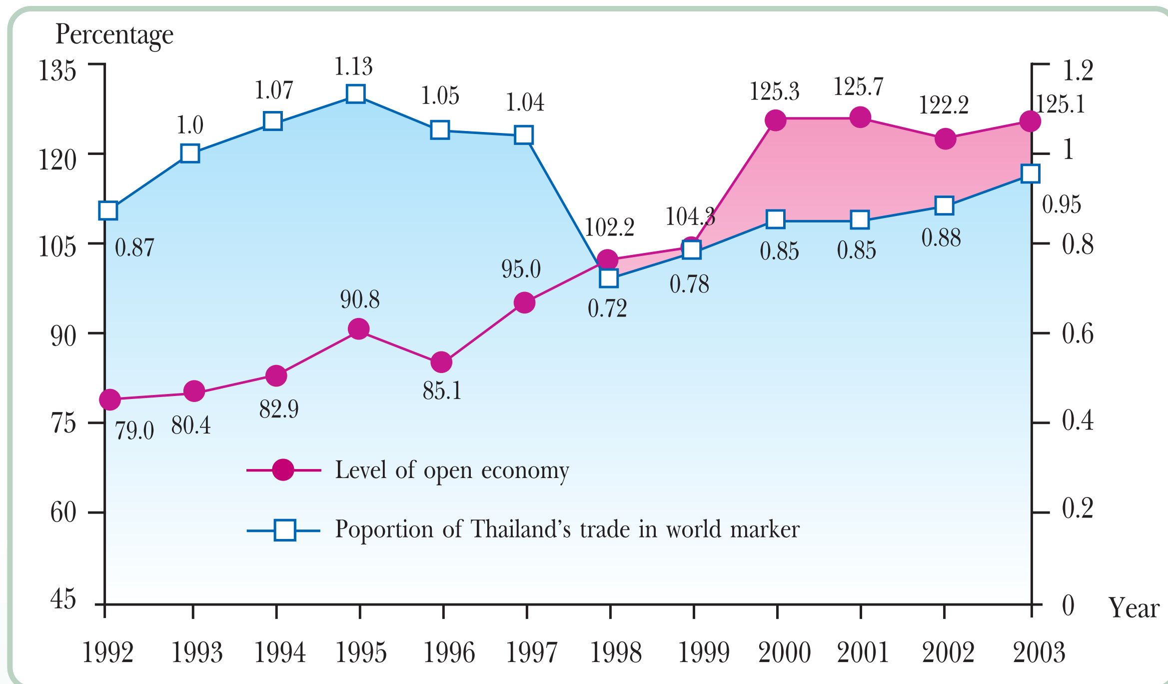
In the globalization era, the world has entered into the free trade system and consolidated regional trade organizations so as to establish negotiating power for competition. This has resulted in movements in establishing economic cooperation mechanisms, in which Thailand is involved, such as the ASEAN Free Trade Area (AFTA), the Asia-Pacific Economic Cooperation (APEC), the Asia-Europe Meeting (ASEM), the Southern Triangle Economic Cooperation, and the Mekong Committee (for development cooperation among six countries). In other regions, such organizations include the North America Free Trade Area (NAFTA) and the European Community (EC). At the global level, there are international trade agreements coordinated by the World Trade Organization (WTO). This has tremendously led to greater liberalization and competition. In particular, developed countries have generated new non-tariff barriers, such as environmental measures, child labour employment, human rights, anti-dumping duty (AD) or countervailing duty (CVD).

The Asian economic crisis has led to the increased economic cooperation among Asian countries such as the Bangladesh-India-Myanmar-Sri Lanka-Thailand Economic Cooperation (BIMST-EC) and the Forum for East Asia-Latin America Cooperation (FEALAC). In particular, Thailand has focused on the expansion of free trade policies in the form of bilateral agreement with several other countries to minimize trade barriers such as the Thailand-China, Thailand-India, Thailand-Bahrain, Thailand-Australia, and Thailand-Japan bilateral trade agreements.

1.5 International Trade

The volume of Thailand's international trade has risen markedly taking into account the rapidly rising levels of trade liberalization. The proportion of export/import/service values to GDP has risen from 79.0% during the pre-crisis period to 125.1% after the crisis (Figure 4.8) as a result of trade liberalization and the production for export promotion policy, which has been implemented continuously for over three decodes. Due to such liberalization, the share of Thai goods in the world market is only 0.9% of the world market values, resulting in an imbalance in the Thai economy being vulnerable to variation of the world economy as it has to rely mainly on the markets in only a few other countries. Thus, Thailand needs to urgently review its new production sectors with high potential in the world market such as medical and health care, particularly health care business, so as to generate more revenue for the nation.

Figure 4.8 Level of Open Economy and Proportion of Thailand's Trade in the World Market, 1992-2003



Sources: (1) The Bank of Thailand.

(2) Department of International Trade Negotiations, Ministry of Commerce.

(3) Office of the National Economic and Social Development Board.

Notes: Level of open economy = (values of exports, imports and services / GDP) x 100

$$\text{Proportion of Thailand's trade in world market} = \frac{\text{Values of Thai exports X 100}}{\text{Values of world exports}}$$

Such economic changes affect the Thai health system as follows:

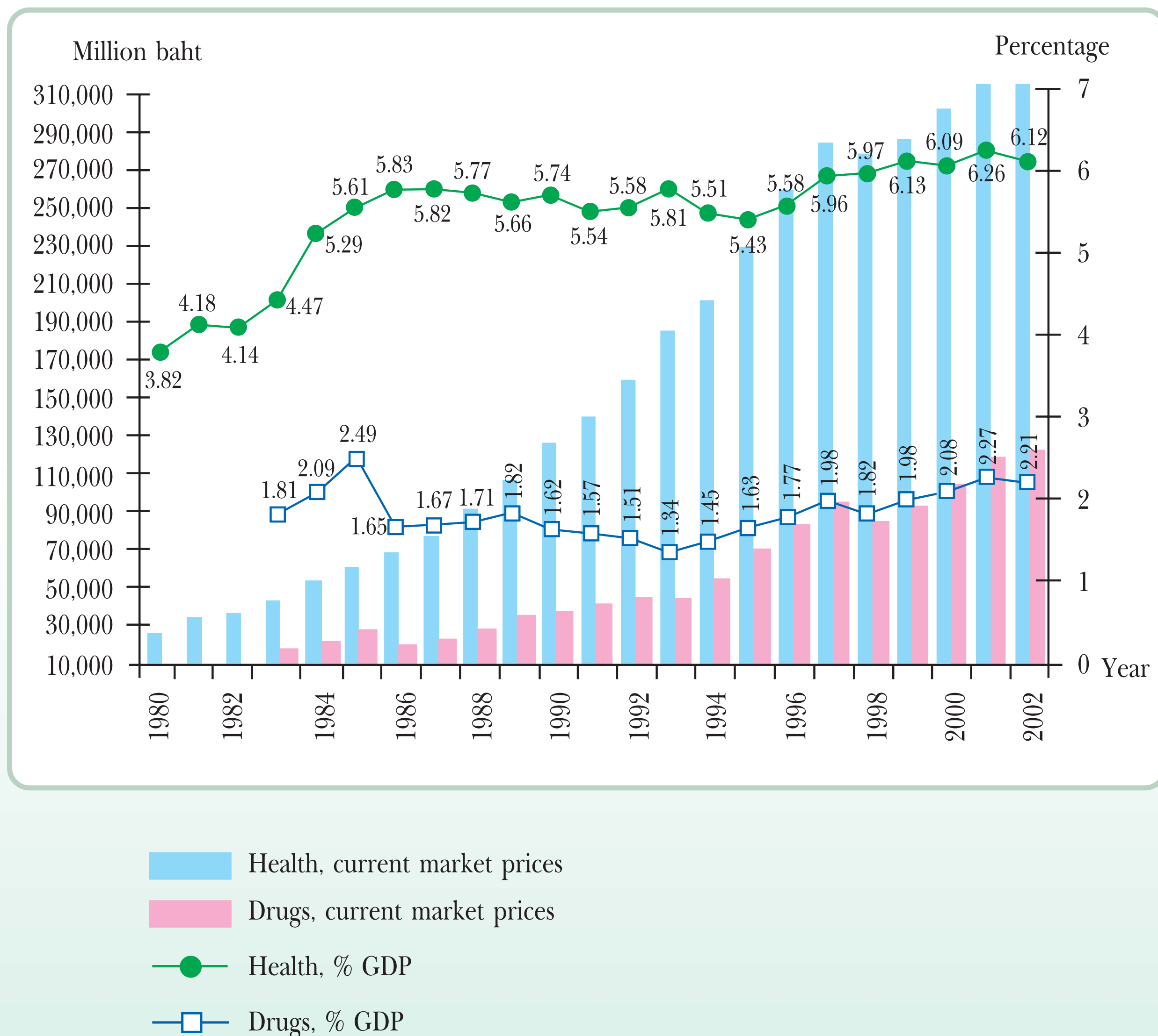
(1) Rising Health Expenditure.

Based on the overall national health account data derived from NESDB, the national health account has been rising from 3.8% of GDP in 1980 to 6.1% in 2002; 34.1% in the public sector and 65.8% in the private sector (Figures 4.9, 6.35 and Table 6.48). The 2001 study on the national health account of the International Health Policy Programme revealed that the expenditure on health accounted for 3.51% of GDP; 58.0% in the public sector and 42.0% in the private sector. Evidently, the discrepancy between these two systems was the expenses in the private sector. The estimates based on NESDB data would be almost twice those derived by using the survey data from the National Statistical Office (NSO).

In terms of equality of health spending burden, it was found that in 2002 the poor had a higher health spending burden relative to their income, **1.6 times higher than that of the rich.** This inequality has fallen from 6.4 times in 1992 as a result of the implementation of the universal health care scheme, started in 2001, resulting in a drop in household health spending (Figure 4.10). In particular, the decline was most apparent during the period 2000-2002.

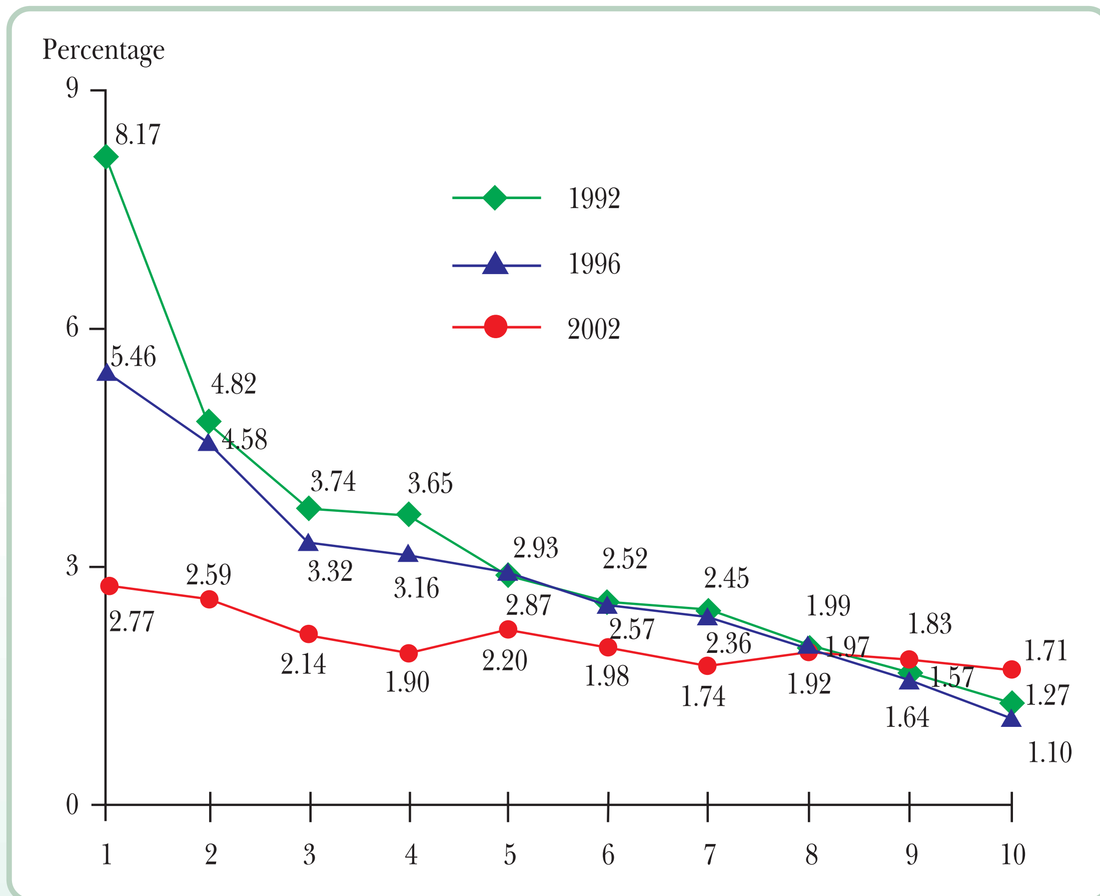
The spending on drugs has been found to increase very rapidly; much more than that for overall health care (Table 4.4 and Figure 4.11).

Figure 4.9 Expenditures on Drugs and Health in Relation to GDP, 1980-2002



Source: Table 6.50 in Chapter 6.

Figure 4.10 Percentage of Households' Health Expenditures, Compared to Income in 1992-2002



Year	Income deciles 1	2	3	4	5	6	7	8	9	10	Discrepancy between group 1 and group 10
1992	8.17	4.82	3.74	3.65	2.87	2.57	2.45	1.99	1.64	1.27	6.4
1994	7.56	4.75	4.49	3.60	3.26	3.03	2.53	2.32	2.03	1.26	6.0
1996	5.46	4.58	3.32	3.16	2.93	2.52	2.36	1.97	1.57	1.10	5.0
1998	4.22	3.07	2.95	2.90	2.59	2.43	1.94	2.00	1.57	1.23	3.4
2000	4.58	3.67	3.29	2.78	2.38	2.22	2.06	1.68	1.55	1.27	3.6
2002	2.77	2.59	2.14	1.90	2.20	1.98	1.74	1.92	1.83	1.71	1.6

Source: Chitpranee Vasavid. Analysis of data from the Household Socio-Economic Survey, 2002. National Statistical Office.

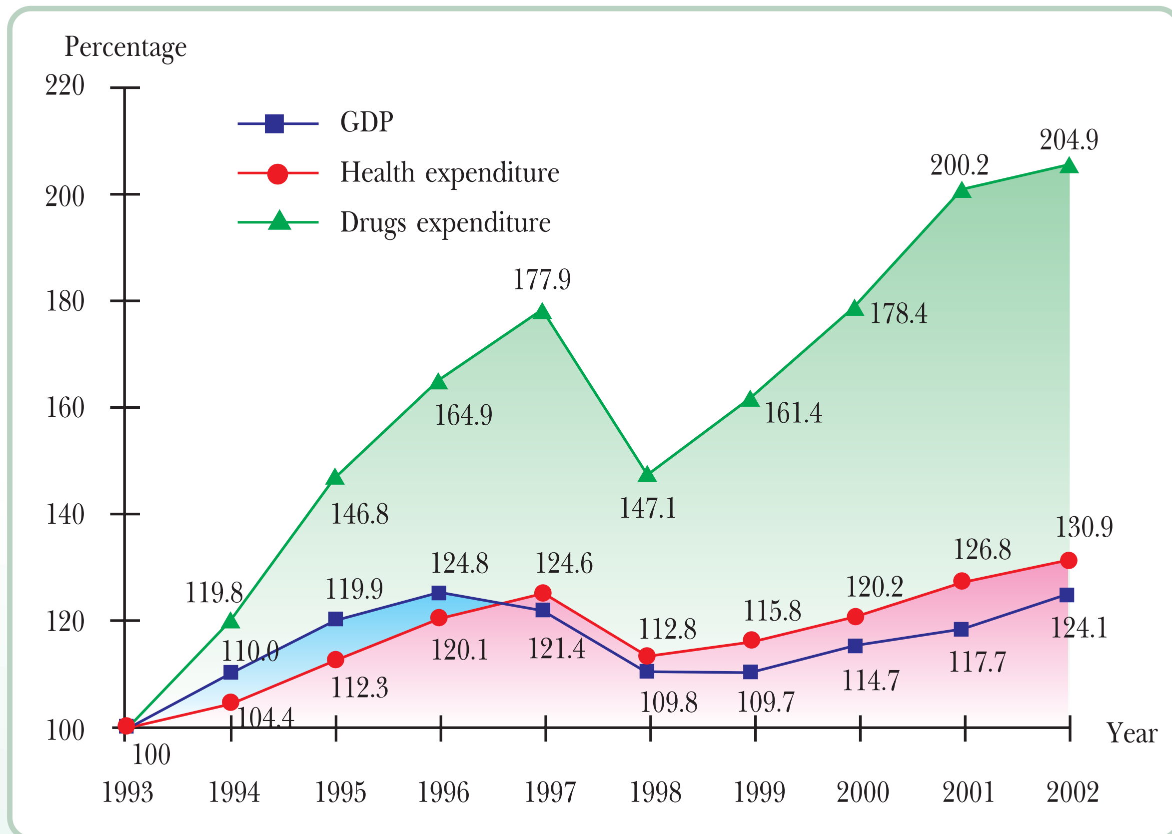
Table 4.4 Growth of Real-Term Expenditures on Drugs and Health and GDP, 1993-2002 (1993 Price = 100)

Year	GDP	Health expenditure	Drug expenditure
1993	100.0	100.0	100.0
1994	110.0	104.4	119.8
1995	119.9	112.3	146.8
1996	124.8	120.1	164.9
1997	121.4	124.6	177.9
1998	109.8	112.8	147.1
1999	109.7	115.8	161.4
2000	114.7	120.2	178.4
2001	117.7	126.8	200.2
2002	124.1	130.9	204.9
Average annual growth rate (10-year period)	2.43	3.03	8.29

Source: Table 6.50 in Chapter 6.

Note: For comparison purpose, health expenditure for 1993 was set at 100.

Figure 4.11 Growth of Real-Term Expenditures on Drugs and Health and GDP, 1993-2002 (1993 Price = 100)



Source: Table 4.4 in Chapter 4.

Note: For comparison purpose, health expenditure for 1993 was set at 100.

(2) Roles of the Public and Private Sectors in Health Care Delivery.

During the bubble economy, the demand for private sector health care rose rapidly. When considering the number of doctors, the proportion of doctors in the private sector climbed from 6.7% in 1971 to 20.5% in 1996. The rise was most rapid during the period 1992-1996, resulting in a serious public-to-private sector brain drain. In 1997, just prior to the economic crisis, 21 community hospitals had no doctors at all.

After the economic crisis, with the people's declined purchasing power, the utilization of private health facilities dropped markedly, resulting in a reduction of revenue in the private sector. The people who could not afford private health services turned to state-run health facilities and some to drugstores for self-medication. Overall, in the beginning of the economic crisis, the numbers of outpatients and inpatients at public health facilities went up, but sluggishly rose during the following period (Tables 4.5 and 4.6). Meanwhile, the number of clients at private health facilities dropped (Table 4.7), corresponding to the results of the study conducted by Weerasak Phuthasri and colleagues (2003) which showed that the numbers of outpatients and inpatients had a tendency to decrease, especially in over-50-bed private hospitals (Table 4.8). But since 2001 the government has implemented the universal health care policy, more outpatients but fewer inpatients have been attending public facilities.

Table 4.5 Number of Outpatient Visits at Public Health Facilities, Fiscal Years 1992-2003

Fiscal year	Regional/general hospitals		Community hospitals		Health centres and CHPs		Total	
	No. of visits (millions)	Change (percent)	No. of visits (millions)	Change (percent)	No. of visits (millions)	Change (percent)	No. of visits (millions)	Change (percent)
1992	11.21		19.00		22.26		52.47	
1993	12.02	+ 7.2	21.01	+ 10.6	23.63	+ 6.2	56.66	+ 8.0
1994	12.61	+ 4.9	23.60	+ 12.3	27.74	+ 17.4	63.95	+ 12.9
1995	14.62	+ 15.9	26.18	+ 10.9	32.43	+ 16.9	73.23	+ 14.5
1996	15.49	+ 6.0	28.00	+ 7.0	35.39	+ 9.1	78.88	+ 7.7
1997	16.78	+ 8.3	29.57	+ 5.6	41.53	+ 17.3	87.88	+ 11.4
1998	18.15	+ 8.2	33.93	+ 14.7	44.54	+ 7.2	96.62	+ 9.9
1999	19.41	+ 6.9	36.71	+ 8.2	46.86	+ 5.2	102.98	+ 6.6
2000	20.44	+ 5.3	40.16	+ 9.4	51.80	+ 10.5	112.40	+ 9.1
2003	23.03	+ 12.7	43.70	+ 8.8	62.39	+ 20.4	129.12	+ 14.9

Source: Bureau of Health Service System Development, Department of Health Service Support.

Note: In FYs 2001-2002, due the restructuring of the MoPH, the data were inaccurate and cannot be shown.

Table 4.6 Number of Inpatients at Public Health Facilities, Fiscal Years 1992-2003

Fiscal year	Regional/general hospitals			Community hospitals			All types of hospitals		
	Million cases	Change (percent)	Change in admissions (percent)	Million cases	Change (percent)	Change in admissions (percent)	Million cases	Change (percent)	Change in admissions (percent)
1992	1.66		+ 17.8	1.79		+ 9.4	3.78	+12.5	
1993	2.00	+ 0.5	+ 16.6	1.89	+ 5.6	+ 9.0	3.89	+11.8	+ 2.9
1994	2.08	+ 4.0	+ 16.5	2.13	+ 12.7	+ 9.0	4.21	+11.6	+ 8.2
1995	2.35	+13.0	+ 16.1	2.24	+ 5.2	+ 8.6	4.59	+11.3	+ 9.0
1996	2.46	+ 4.7	+ 15.9	2.39	+ 6.7	+ 8.5	4.85	+11.2	+ 5.7
1997	2.56	+ 4.1	+ 15.3	2.44	+ 2.1	+ 8.3	5.00	+10.8	+ 3.1
1998	2.59	+ 1.2	+ 14.3	2.85	+ 16.8	+ 8.4	5.44	+10.4	+ 8.8
1999	2.62	+ 1.2	+ 13.5	2.82	- 1.1	+ 7.7	5.44	+ 9.7	0.0
2000	2.56	- 2.3	+ 12.5	2.92	+ 3.5	+ 7.3	5.48	+ 9.0	+ 0.7
2001	2.74	+ 7.0	+ 12.1	3.17	+ 8.6	+ 7.1	5.91	+ 8.8	+ 7.8
2002	2.41	- 12.0	+ 8.7	2.76	- 12.9	+ 4.1	5.17	+ 5.5	-12.5
2003	2.50	+ 3.7	+ 10.9	2.89	+ 4.7	+ 6.6	5.39	+ 8.1	+ 4.3

Source: Bureau of Health Service System Development, Department of Health Service Support.

Table 4.7 Numbers of Outpatient Visits and Inpatients at Private Health Facilities, Fiscal Years 1991-2002

Fiscal year	No. of private health facilities surveyed	Outpatient visits		Inpatients		Change (percent)
		Number (millions)	Average visits/hospital/yr	Number (millions)	Average cases/hospital/yr	
1991	257	2.24	8,716	0.50	1,946	+22.3
1992	268	2.52	9,403	0.64	2,388	+25.4
1993	263	2.82	10,722	0.67	2,548	+23.7
1994	322	3.79	11,770	0.85	2,640	+22.4
1995	357	4.29	12,017	0.97	2,717	+22.6
1996	358	4.95	13,827	1.63	4,553	+32.9
1997	358	4.45	12,430	1.58	4,413	+35.5
1998	373	5.17	13,860	1.62	4,343	+31.3
1999	374	4.58	12,246	1.47	3,930	+32.1
2000	331	4.14	12,507	1.48	4,471	+35.7
2001	323	4.97	15,387	1.71	5,294	+34.4
2002	320	4.03	12,594	1.54	4,812	+38.2

Source: Report on Health Resources, Bureau of Policy and Strategy, MoPH.

Notes:
1. Private health facilities include private hospitals and polyclinics.
2. The reported numbers are approximately 5 times lower than those revealed in the NSO survey.

Table 4.8 Average Numbers of Outpatient Visits and Inpatients in Private Hospitals, 1996-2000

Type of patients	Total	Size of hospitals				Change between 1997 and 2000		
		< 50 beds	51 - 100 beds	101 - 200 beds	>200 beds	Size of hospital	Outpatient Percent	Inpatient Percent
• 1996								
- Outpatients (visits)	70,953	23,454	66,880	137,866	276,785	< 50 beds	- 9.1	- 32.8
- Inpatients (cases)	6,305	2,018	5,857	12,251	26,238			
• 1997								
- Outpatients (visits)	70,024	22,086	65,750	141,308	283,699	51-100 beds	+ 8.3	- 16.9
- Inpatients (cases)	6,250	2,015	6,828	11,685	23,037			
• 1998								
- Outpatients (visits)	65,096	20,605	67,897	131,958	256,849	101-200 beds	+ 3.2	- 24.0
- Inpatients (cases)	5,017	1,605	5,643	9,990	18,678			
• 1999								
- Outpatients (visits)	67,409	19,838	73,608	140,495	267,076	> 200 beds	- 10.6	- 25.7
- Inpatients (cases)	4,564	1,330	5,397	9,050	17,272			
• 2000								
- Outpatients (visits)	66,407	20,070	71,184	145,799	253,485	All sizes	- 5.2	- 26.9
- Inpatients (cases)	4,569	1,353	5,671	8,875	17,121			

Source: Weerasak Phuthasri et al. Report on a Study of the Role and Adjustments of Hospitals in Thailand Before and During the Economic Crisis (1996-2001), 2003.

Note: The analysis of private hospitals' conditions is based on the database of the Survey on Private Hospitals of the National Statistical Office.

(3) Mental Health Problems are on the Rise.

Intensive competition during the bubble economic period resulted in a rising prevalence of mental disorders. Moreover, the economic crisis also resulted in a higher unemployment rate, leading to an increasing trend of suicidal ideation. Eleven surveys on people's mental health conditions during the economic crisis, conducted from September 1997 to September 2000, revealed that the prevalence of those with stress and suicidal ideation among the unemployed was higher than that among the employed and general public (Department of Mental Health, MoPH). And even though the crisis has been over, mental health problems remain more prevalent, particularly psychosis, rising from 440.1 per 100,000 population in 1997 to 519.6 per 100,000 population in 2001 (see the section on mental health indicators in Chapter 5).

(4) Government Budget for Health. During the period of economic boom, the Ministry of Public Health's budget increased to 7.7% of the national budget. Most of the budget was previously expended on investments. But during the economic crisis, the government budget for health had a declining trend, especially for investments. Since 2001 the government has implemented the universal health care policy and the government health budget, particularly the operating budget, has risen steadily. As a result, the proportion of overall MoPH budget has risen to 7.6% in 2004 (see details in Chapter 7).

(5) Investments in Health Technology. The great expansion in health technology investments has slowed down since the 1997 economic crisis (see additional details in section 1.3.2 Medical and Health Technology in Chapter 6). During the economic boom, plenty of medical technologies were imported with duty exemptions, particularly medical equipment according to the investment promotion policy. This led to competition in purchasing high-cost medical equipment, resulting in the clustering and utilizing of medical technology not in alignment with the national economic development. In 1988, for instance, in Bangkok Metropolis there were 10 CT scanners per one million population, a proportion greater than that in the United Kingdom which had only 6.3 machines per one million population. The proportion (machines per one million population) rose rapidly to 15.7 in 1994 and further increased slightly to 15.9 in 1999 for Bangkok. For the entire country, the proportion was only 4.5 in 1999 (Table 4.9). The investment on high-cost medical devices slowed down after the economic crisis occurred.

Table 4.9 Number of CT Scanners in Developed Countries Compared to Those for Thailand and Bangkok, 2003

Country	No. of CT scanners (per million population)
Japan (1996)	69.7
U.S.A. (1990)	26.9
Italy (1997)	14.6
France (1997)	9.7
United Kingdom (1990)	6.3
Thailand (1995)	2.0
Thailand (1998)*	3.9
Thailand (1999)	4.5
Thailand (2003)*	4.2
Bangkok Metropolis (1988)	10.0
Bangkok Metropolis (1994)	15.7
Bangkok Metropolis (1998)	14.8
Bangkok Metropolis (1999)	15.9
Bangkok Metropolis (2003)*	13.3
Provinces (1999)	3.3
Provinces (2003)*	3.1

Sources: Wongduern Jindawatthana et al. Expensive Medical Devices in Thailand: Distribution and Access, 2000.
* Data from the Radiation and Medical Devices Division, Department of Medical Sciences.

(6) Industrial Sector's Expansion. The expansion in this sector at a rate higher than that in the agriculture sector has resulted in the following situations:

(6.1) Greater migration of labour force from the agricultural sector to the industrial sector in urban areas has resulted in the problems of family institution deterioration, stress, crime, traffic congestions, drug abuse and environmental health. In particular, slums and solid wastes are becoming serious problems in large cities nationwide. The number of urban slums has risen from 1,587 in 1994 to 1,802 in 1997 and to 2,265 in 2000, or by 13.5%, and 25.7%, respectively, mostly in Bangkok and vicinity. A survey on demographic and social characteristics of slums in 17 provinces including those around Bangkok and others with a large number of slums in various regions in 1998 revealed that more than 50% of such slums had a drug abuse problem, mostly related to "ya ba" or methamphetamines and volatile solvents (Report on the Survey of Demographic and Social Characteristics of Slums in the Provinces around Bangkok and Other Regions, 1998, National Statistical Office). This is only one of the problems that reflects the people's health status and quality of life.

(6.2) Health problems associated with working conditions and occupational health. In 2003, the working-age population was 34.7 million, 54.1% of the total population: 15.6 million in the agricultural sector, 15.8 million in the industrial and service sectors, 2.6 million in the public sector, and 0.7 million in other sectors, generally in both formal and informal systems.

(6.2.1) Labour force in the formal sector.[1] In 2003, there were 9.8 million workers in the formal sector (or 28.4% of total workforce), including civil servants, state enterprise employees, and employees of business workplaces with 10 or more workers. Most of the workers completed only primary education, thereby not being able to protect or take care of themselves from occupational problems. The rate of employees with occupational injuries had a tendency to rise, i.e. from 2% in 1976 to 4.7% in 1993, then began to stabilize and decline to 3.0% in 2003. But the rate of work-related fatalities has been declining from 44.9 per 100,000 workers in 1979 to 11.19 per 100,000 workers in 2003 (Table 4.10 and Figure 4.12). However, the rate is considered to be relatively high, compared with those in developed countries. For instance, the work-related fatality rate per 100,000 workers is only 1.3 in the U.K. and only 4 in Finland (Choochai Supawongse. Environmental Situation and Its Impact on Health in Thailand, 1996).

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[1] Labour in the formal sector means the labour market that has a clear organizational or structural system of employment, recruitment, contracting or definite employment contract period, and welfare and social security with a specified line of command and responsibilities for each type of labour.

Table 4.10 Numbers and Rates of Occupational Deaths and Injuries in Workers, 1974-2003

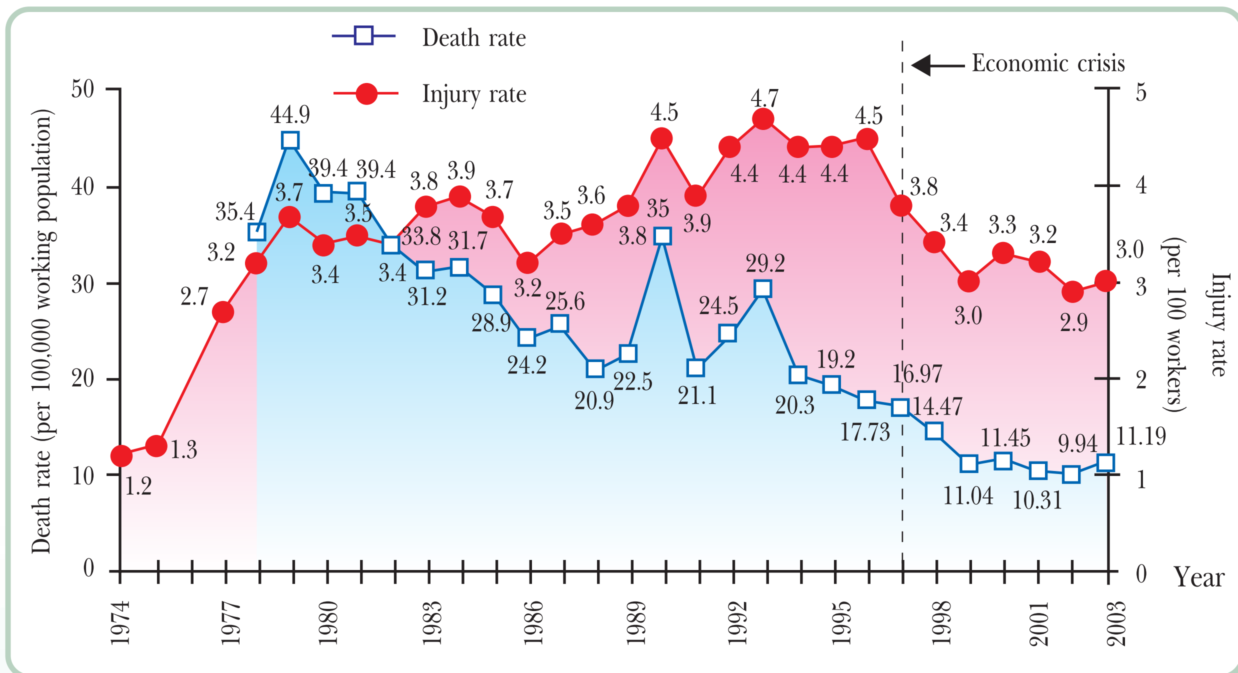
Year	No. of workers covered	No. of workers injured	Rate of injuries (percent)	Death		Disability		Loss of some organs		Temporary absenteeism	
				No.	Rate	No.	Rate	No.	Rate	No.	Rate
1974	272,848	3,200	1.2	95	34.8	-	-	401	146.9	2,704	991.0
1975	349,814	4,605	1.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1976	496,700	10,136	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1977	570,000	15,335	2.7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1978	590,640	19,134	3.2	209	35.4	9	1.5	1,119	18.9	17,797	3,013.2
1979	659,041	24,370	3.7	296	44.9	8	1.2	1,104	16.8	22,962	3,484.1
1980	745,513	25,334	3.4	294	39.4	13	1.7	1,191	16.0	23,836	3,197.3
1981	797,270	27,723	3.5	314	39.4	10	1.3	1,275	16.0	26,124	3,276.7
1982	824,565	28,323	3.4	279	33.8	14	1.7	1,085	131.2	26,945	3,267.8
1983	873,059	33,213	3.8	272	31.2	5	0.6	514	62.3	32,422	3,713.6
1984	994,190	39,182	3.9	315	31.7	20	2.0	1,305	131.3	37,542	3,776.1
1985	1,091,318	39,119	3.7	315	28.9	18	1.7	1,159	106.2	37,627	3,447.8
1986	1,179,812	37,445	3.2	285	24.2	10	0.8	978	82.9	36,172	3,065.9
1987	1,232,555	42,811	3.5	315	25.6	10	0.8	1,158	93.9	41,328	3,353.0
1988	1,346,203	48,912	3.6	282	20.9	7	0.5	1,179	87.6	47,444	3,524.3
1989	1,661,651	62,766	3.8	373	22.5	15	0.9	1,582	95.2	60,796	3,658.8
1990	1,826,995	80,065	4.5	640	35.0	30	1.6	1,509	82.6	77,886	4,263.1
1991	2,751,868	102,273	3.9	581	21.1	9	0.3	2,141	77.8	99,542	3,617.3
1992	3,020,415	131,800	4.4	740	24.5	15	0.5	2,010	66.5	129,035	4,272.1
1993	3,355,805	156,543	4.7	980	29.2	10	0.3	5,436	161.9	150,122	4,473.5
1994	4,248,414	186,394	4.4	863	20.3	23	0.5	4,548	107.0	180,960	4,259.5
1995	4,903,736	216,525	4.4	940	19.2	17	0.4	5,469	111.5	209,909	4,280.6
1996	5,425,422	245,616	4.5	962	17.73	18	0.3	5,042	92.93	239,574	4,416.1
1997	6,084,822	230,376	3.8	1,033	16.97	29	0.4	5,272	86.64	224,042	3,681.9
1998	5,418,182	186,445	3.4	784	14.47	19	0.3	3,692	68.14	181,956	3,358.1
1999	5,679,567	172,087	3.0	627	11.04	14	0.2	3,437	60.51	168,009	2,958.1
2000	5,417,041	179,566	3.3	620	11.45	16	0.3	3,516	64.91	175,414	3,238.2
2001	5,884,652	189,621	3.2	607	10.31	20	0.3	3,510	59.65	185,484	3,152.0
2002	6,541,105	190,979	2.9	650	9.94	14	0.2	3,424	52.54	186,891	2,857.2
2003	7,033,907	210,673	3.0	787	11.19	17	0.2	3,821	54.32	206,048	2,929.35

Source: Ministry of Labour.

Notes: (1) n.a. = Data not available.

(2) Except for the rate of injuries, other rates are per 100,000 workers.

Figure 4.12 Rates of Deaths and Injuries Due to Occupational Hazard Exposure, 1974-2003



Source: Ministry of Labour.

(6.2.2) Labour force in the informal sector.[2] In 2003, there were 24.8 million workers in the informal employment system (71.6% of total labour force), including those in the agricultural sector, the self-employed, home-based workers, etc. A survey on workers who do the work at home as hired by a certain business revealed that such workers had problems related to occupational safety; the rate rising from 2.8% in 1999 to 33.2% in 2002. Most of such problems were related to eye-sight, working position and dust (Reports on the Surveys of Home-based Work, 1999 and 2002. National Statistical Office).

(7) Trade liberalization and international economic cooperation have led to increased trade competition and protection partially affecting health products and services industries (see Chapter 10).