

## CHAPTER 5

### DISCUSSION, CONCLUSION, LIMITATION, AND RECOMMENDATION

#### 5.1. Discussion

The methods used to study the equity of budget allocation for general and regional hospitals in Thailand are : (1) To analyze the patterns of budget allocation from MOPH to general and regional hospitals in Thailand in 1997. (2) To apply the weight population according to purpose to set a pattern of budget allocation from MOPH to general and regional hospitals.

The research methodology in chapter 3 and research results in chapter 4 are discussed as follows :

5.1.1. Analysis of the patterns of budget allocation from MOPH to general and regional hospitals in Thailand in 1997

When budget allocation from MOPH to general and regional hospitals was analyzed in terms of line items, it was found that too much is spent on salaries compared to operating cost. It is shown in table 5.1 that line item 1 of budget expenditure in 1997 (salary of civil servants and permanent employees) was the most costly line item (33.45%)

Cassels,1995,outline the problem main of health care delivery. Most health care providers in less developed and developing countries face similar problems, was namely scarce resources being used inefficiently and too much spending on salaries compared to operating costs. A study of health sector finance planning (E.P Mach and B.Able – Smith) in aspect of source of finance in the hospitals was budget from The Provincial Hospital Division and The Health Insurance Office was supported by the government. When the private sources of finance in the hospitals (income of the hospitals which it is separate from support budget by the government), were considered it was found that percentage of budget expenditure was 63 percent and non-budget expenditure was 37

percent (in figure 5.1). Figure 5.2 compare between government budget expenditure and non-government expenditure in the 92 hospitals in term of line items indicated that the highest proportion of government budget was line item 1 while the highest proportion of non-government budget was line item 2.

Table 5.1 Line items of Government Budget Expenditure and Non-Government Budget Expenditure of Regional and General Hospitals in 1997

Unit : Baht

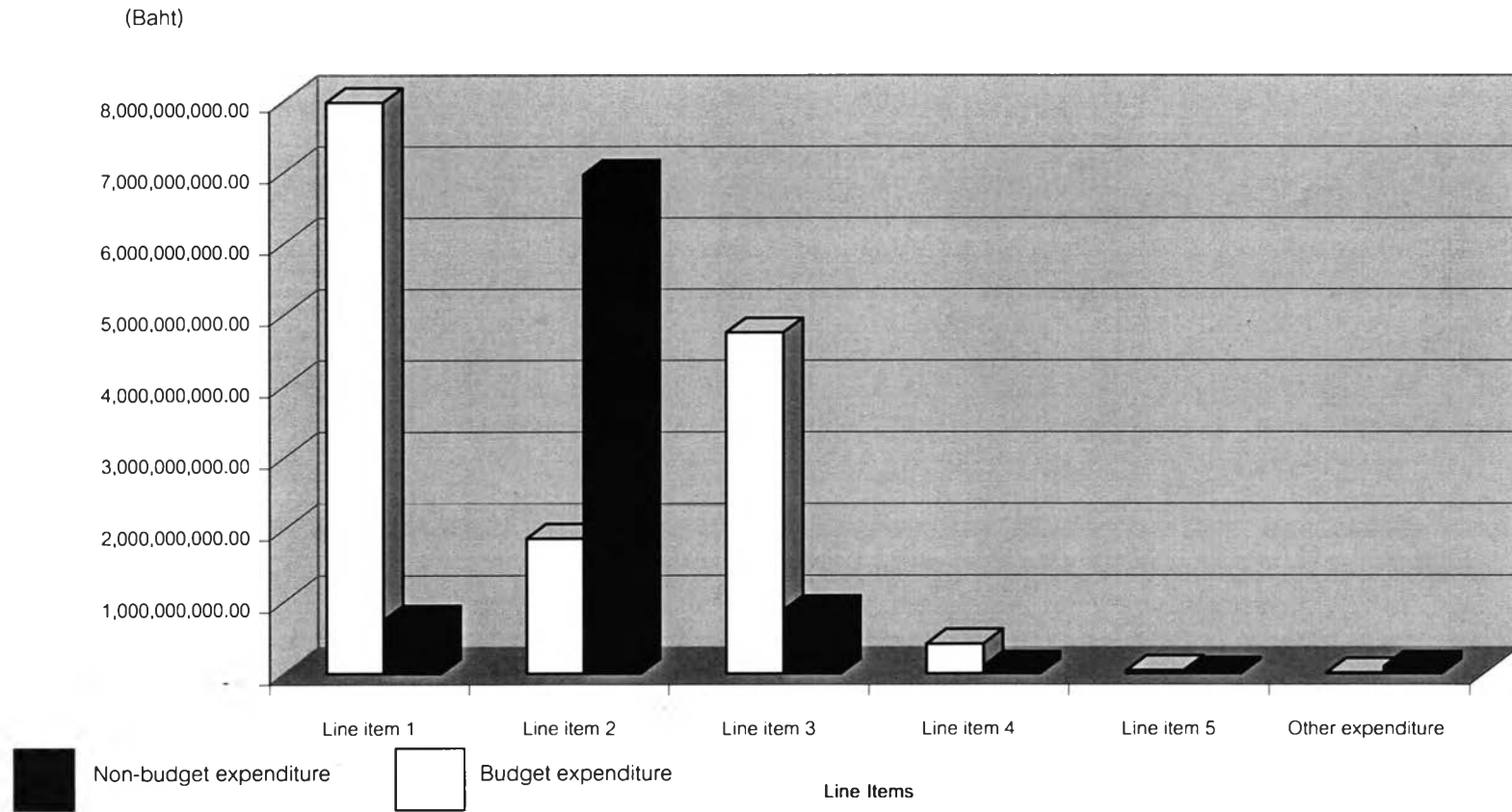
Items of expenditure	Govrnmnt Budget	Jon-Government budge	Total	Percentage
Line item 1			8,714,364,567.02	36.54
- Salary of civil servants	6,245,864,809.33	0	6,245,864,809.33	26.19
- Salary of permanent employe	1,732,001,089.27	0	1,732,001,089.27	7.26
- Salary of temporary employees		736,498,668.42	736,498,668.42	3.09
Line item 2	1,870,079,320.53	6,963,449,115.51	8,833,528,436.04	37.05
Line item 3	4,748,583,895.11	872,971,372.95	5,621,555,268.06	23.58
Line item 4	409,906,881.88	100,114,207.98	510,021,089.86	2.13
Line item 5	42,772,061.90	18,219,132.23	60,991,194.13	0.26
Other expenditure	9,012,035.86	98,000,500.42	107,012,536.28	0.45
Total	15,058,220,093.88	8,789,252,997.51	23,844,473,091.39	100.00

Source : The Provincial Hospital Division

Figure5.1 Percentage of Government Budget Expenditure and Non-Government Expenditure in 1997



Figure 5.2 Comparison of Budget Expenditure and Non-Budget Expenditure in term of Line Items, in 1997



It was also found that population was an influential weight of the actual budget allocation for equity to regional and general hospitals but the other weights do not reflect budget allocation for equity. An investigation, for example, in some hospitals in table 5.2 shows that the expected and actual budget are no related to NBR values while in some hospitals are related to NBR values :

- NBR value of Phranungklaio nonthaburi hospital was 0.0189, NBR value of Pathumthani hospital was 0.0083. but Phranungklaio nonthaburi hospital received both expected budget and actual budget more than Pathumthani hospital.

- NBR value of Prachuapkhirikhan hospital was 0.0065, NBR value of Samutsakhon hospital was 0.0134. So,Prachuapkhirikhan hospital received both expected budget and actual budget more than Samutsakhon hospital.

Table 5.2 Comparison between Expected and Actual Budget by NBR values

No	Hospital	NBR	EB(Input) (Baht / hospital / year)	AB (Baht / hospital / year)
<b>CENTRAL REGION</b>				
1	Phranungklao Nonthaburi Hospital	0.0189	198,495,810.32	139,986,558
2	Pathumthani Hospital	0.0083	142,942,808.63	122,927,362
3	Phranakhonsriyuttaya Hospital	0.0113	89,996,209.70	130,902,336
4	Sena Phranakhonsriyuttaya Hospital	0.0054	89,980,239.47	68,893,969
5	Angthong Hospital	0.0071	72,814,391.31	106,485,343
6	Samutprakan Hospital	0.0012	237,640,093.91	135,187,331
7	Saraburi Hospital	0.0202	72,989,948.34	188,863,405
8	Phraphuthabat Saraburi Hospital	0.0071	73,479,813.52	133,679,436
9	Chaophrayayomrat Suphanburi hospital	0.016	107,687,048.94	143,390,269
10	Somdetphrasungkharat 17 Hospital	0.0036	108,169,699.42	102,718,087
11	Singburi Hospital	0.0069	28,030,165.94	103,705,064
12	Inburi Singburi Hospital	0.0053	28,034,247.59	73,804,874
13	Lopburi Hospital	0.0106	95,017,493.37	121,690,307
14	Banme Lopburi Hospital	0.0057	95,286,862.94	120,732,589
15	Nakhonnayok Hospital	0.0087	60,806,970.15	126,157,376
16	Chainat Hospital	0.0068	89,358,801.82	119,492,239
17	Chonburi Hospital	0.0328	252,523,048.32	250,695,017
18	Chaophrayaapaiphubet Hospital	0.0142	109,952,796.87	147,230,495
19	Somdetphrayuparat Sakaew Hospital	0.0028	132,017,751.65	73,634,745
20	Phrapokklao Chanthaburi Hospital	0.0194	122,147,002.77	204,675,871
21	Muang Chachoengsao Hospital	0.0143	158,215,176.79	148,450,206
22	Trat Hospital	0.0073	54,533,335.04	104,986,992
23	Rayong Hospital	0.0131	122,190,722.33	136,080,591
24	Ratchaburi Hospital	0.0243	50,267,721.84	172,365,627
25	Banpong Ratchaburi Hospital	0.0067	50,719,475.15	106,502,467
26	Potharam Ratchaburi Hospital	0.0042	50,652,871.25	78,651,861
27	Dumnoensaduk Ratchaburi Hospital	0.0049	50,736,136.44	72,011,411
28	Nakhonpathom Hospital	0.0260	190,198,046.54	203,403,387

(continued)



No	Hospital	NBR	EB(Input)	AB
		(Baht / hospital / year) (Baht / hospital / year)		
29	Phahonphonphayahasena Kanchanaburi Hospital	0.0127	95,579,374.35	126,810,121
30	Makaruk Kanchanaburi Hospital	0.0072	95,811,970.61	80,541,872
31	Pharjomklao Phetchaburi Hospital	0.0083	114,791,224.26	154,349,863
32	Prachuapkhirikhan Hospital	0.0065	117,589,202.57	130,215,076
33	Samutsakhon Hospital	0.0134	98,100,436.02	119,801,838
34	Somdetphraputhaloenla Samutsongkhram Hospital	0.0090	51,860,445.77	99,999,684
<b>NORTHEASTERN REGION</b>				
35	Chaiyaphum Hospital	0.0082	30,383,102.44	206,473,315
36	Buriram Hospital	0.0131	401,768,769.13	236,241,200
37	Surin Hospital	0.0110	369,596,471.59	241,951,718
38	Maharat Nakhonratchasima Hospital	0.0317	707,730,989.89	439,248,599
39	Sisaket Hospital	0.0073	383,033,097.46	254,323,877
40	Loei Hospital	0.0085	161,154,552.30	146,911,108
41	Nongkhai Hospital	0.0062	231,292,379.55	167,449,572
42	Khonkaen Hospital	0.0206	466,487,802.83	358,289,996
43	Udonthani Hospital	0.0197	398,183,738.09	287,556,872
44	Nongbualamphu Hospital	0.0021	123,955,483.25	68,989,588
45	Sakhonnakhon Hospital	0.0089	283,964,254.77	208,382,693
46	Yasothon Hospital	0.0090	140,896,992.71	145,345,634
47	Sanpasitprasong Hospital	0.0238	470,503,054.07	373,805,896
48	Amnatcharoen Hospital	0.0030	91,280,863.82	66,412,188
49	Nakhonphanom Hospital	0.0049	182,261,624.68	175,352,118
50	Mukdahan Hospital	0.0041	82,371,439.84	104,621,186
51	Kalasin Hospital	0.0111	254,121,162.05	177,654,854
52	Roi Et Hospital	0.0099	349,778,217.94	220,556,093
53	Mahasarakham Hospital	0.0080	236,134,581.54	191,624,871
<b>NORTHERN REGION</b>				
54	Uthaithani Hospital	0.0071	82,997,128.20	121,558,435
55	Sawanpracharuk Nakhonsawan Hospital	0.0208	296,336,859.27	257,673,918
56	Somdetphrachaotaksinmaharat Hospital	0.0058	58,911,153.22	96,163,103

(continued)

No	Hospital	NBR	EB(Input)	AB
		(Baht / hospital / year) (Baht / hospital / year)		
57	Maesod Tak Hospital	0.0061	58,976,460.27	89,301,770
58	Kamphaengphet Hospital	0.0065	196,734,925.67	115,757,495
59	Sukhothai Hospital	0.0073	79,043,850.42	97,180,473
60	Srisungwon Sukhothai Hospital	0.0048	79,261,342.16	88,313,305
61	Phuthachinarat phetsanulok Hospital	0.0366	220,775,339.15	284,538,676
62	Phetchabun Hospital	0.0061	271,510,624.07	143,763,199
63	Phrae Hospital	0.0080	127,216,252.76	167,222,236
64	Nan Hospital	0.0111	123,256,825.47	166,828,811
65	Phichit Hospital	0.0086	153,035,665.46	142,110,338
66	Uttaradit Hospital	0.0177	121,976,236.89	179,988,730
67	Lampang Hospital	0.0239	209,268,351.87	269,702,746
68	Chiangraiprachanukhrau Hospital	0.0216	339,135,069.93	270,300,383
69	Nakhonping Chiangmai Hospital	0.0129	429,767,069.80	220,203,713
70	Srisungwan Maehongson Hospital	0.0031	57,372,109.07	88,742,604
71	Lamphun Hospital	0.0053	104,046,900.12	126,449,104
72	Phayao Hospital	0.0056	65,663,823.27	131,948,968
73	Cheangkhum Phayao Hospital	0.0037	65,564,746.61	89,007,754
SOUTHERN REGION				
74	Suratthani Hospital	0.0241	107,776,882.46	200,189,731
75	Kao Samui Suratthani Hospital	0.0019	108,458,630.44	77,077,851
76	Chumphon Hospital	0.0081	114,186,336.64	131,509,658
77	Ranong Hospital	0.0042	38,103,912.66	87,917,151
78	Maharat Nakhonsrithammarat Hospital	0.0263	400,363,456.49	337,923,957
79	Phangnga Hospital	0.0042	28,760,640.90	66,677,938
80	Takuapha Phangnga Hospital	0.0037	28,744,997.88	75,139,536
81	WicharaPhuket Phuket Hospital	0.0140	55,363,726.38	115,121,901
82	Krabi Hospital	0.0057	87,140,387.07	94,744,581
83	Narathiwat Hospital	0.0075	81,589,314.44	127,808,230
84	Suhaikolok Narathiwat Hospital	0.0037	81,672,369.23	82,493,444
85	Pattani Hospital	0.0075	151,377,116.69	127,703,732

(continued)



No	Hospital	NBR	EB(Input)	AB
		(Baht / hospital / year) (Baht / hospital / year)		
86	Yala Hospital	0.0194	52,896,052.09	139,656,274
87	Betong Yala Hospital	0.0020	53,290,772.40	67,151,896
88	Trang Hospital	0.0111	147,410,454.18	149,673,535
89	Phatthalung Hospital	0.0083	127,389,280.08	130,557,670
90	Satun Hospital	0.0037	63,817,780.91	84,936,010
91	Songkhla hospital	0.0127	150,895,179.41	180,010,162
92	Hadyai Songkhla Hospital	0.0276	149,154,857.16	199,494,738
	Total	1.0000	14,042,758,803.00	14,042,758,803

5.1.2 The weight population is applied according to purpose set pattern of budget allocation from MOPH to general and regional hospitals

The weight population is applied by measure of relative population health need (World Bank, 1998) which consists of variables accounting for mortality, morbidity, cost, income, unemployment, and age. And by definition of World Health Organization, 1996 Equity in health care requires equity (a) in the way health care resources are allocate (b) in the way health needs are served and (c) in the way health services are paid for. Besides the study of Cassel, 1995 the fact is that people can not get the health care they need. Examples of factors which present different health needs for deferent individual were shown. Those factors were income, geographical location, sex, age, and employment status. We should also consider the study of Linda, 1995, about of Equity in Budget Allocation for health. Linda's variables were population size, number of out patients, number of day admissions, number of beds, mortality rates, income, non-government budget, and revenue of social security scheme.

The concepts of the above studies were considered by this study. The variables use by Linda' study and also other variables such as age group and number of referrals were measured. After that the weight population value of each hospital was calculated using equations 3.1-3.6 in chapter 3.

In analyzing the 6 patterns of budget allocation from chapter 4 the mean relative rate values in the 6 equations are considered. And comparison between equations 3.1 to 3.6 found that the weight population of hospital need in terms of input more than the weight population of hospital need in terms of output. Considering the variables of number of referrals and number of people insured in social security schemes in each hospital, it was found that the population weighted for number of referrals was more than that weighted for number of people insured in social security schemes. Looking at the 6 equations we see that population weighted for number of referrals in terms of out put has highest value and population weighted for number of people insured in social security schemes in terms of output has the lowest value. So the most influential variables for budget allocation to regional and general hospitals are mortality rate, number of beds, and number of referrals. Number of out patient visits and number of day admissions follow

in order of importance. These results point in the same direction of Linda's study and it has been shown that the number of referrals (which Linda did not consider) is the most influential variable in terms of budget allocation to regional and general hospitals.

Over all the weight populations for each hospital in the 6 equations are close. due to the formulas used in equations. So it shows that the 6 equations have similar influence and considered the total ratio of 6 equation (Figure 4.1 to 4.4) by assume that budget allocation for equity is the total ratio of 6 equations value 6 unit and found that have a lot of hospital which has the total ratio of 6 equations more than 6 unit, it mean that these hospital receive actual budget more than expected budget. These hospitals shows in table 5.3 which should reduce budget is 2,443,462,083.90 baht. But in practice the budget allocated last year can not be cut . If hospital is considered to have a total ratio of the 6 equations of less than 6 units, it means that these hospitals receive an actual budget less than the expected budget and these hospitals should be allocated more budget. There are 33 such hospitals (table 5.4) and the total budget is 2,443,462,083.90 baht of which the Northeastern region should be allocated the most.

Table 5.3 List of Hospitals : Less Allocated Budget

No	Hospital	Budget (Baht)	No	Hospital	Budget (Baht)
<b>CENTRAL REGION</b>			18	Potharam Ratchaburi Hospital	27,998,989.75
1	Phranakhonsriyuttaya Hospital	40,906,126.30	19	Dumnoensaduk Ratchaburi Hospital	21,275,274.56
2	Angthong Hospital	33,670,951.69	20	Nakhonpathom Hospital	13,205,340.46
3	Saraburi Hospital	115,873,456.66	21	Phahonphonphayuhasena Kanchanaburi Hospital	31,230,746.65
4	Phraphuthabat Saraburi Hospital	60,199,622.48	22	Pharjomklao Phetchaburi Hospital	39,558,638.74
5	Chaophrayayomrat Suphanburi hospital	35,703,220.06	23	Prachuapkhirikhan Hospital	12,625,873.43
6	Singburi Hospital	75,674,898.06	24	Samutsakhon Hospital	21,701,401.98
7	Inburi Singburi Hospital	45,770,626.41	25	Somdetphraputhaloenla Samutsongkhram Hospital	48,139,238.23
8	Lopburi Hospital	26,672,813.63	<b>NORTHEASTERN REGION</b>		
9	Banme Lopburi Hospital	25,445,726.06	26	Chaiyaphum Hospital	176,090,212.56
10	Nakhonnayok Hospital	65,350,405.85	27	Yasothon Hospital	4,448,641.29
11	Chainat Hospital	30,133,437.18	28	Mukdahan Hospital	22,249,746.16
12	Chaophrayaapaiphubet Hospital	37,277,725.13	<b>NORTHERN REGION</b>		
13	Phrapokklao Chanthaburi Hospital	82,528,868.23	29	Uthaihani Hospital	38,561,306.80
14	Trat Hospital	50,453,656.96	30	Uthaihani Hospital	37,251,949.78
15	Rayong Hospital	13,889,868.67	31	Uthaihani Hospital	30,325,309.73
16	Ratchaburi Hospital	122,097,905.16	32	Sukhothai Hospital	18,136,622.58
17	Banpong Ratchaburi Hospital	55,782,991.85	33	Srisungwon Sukhothai Hospital	9,051,962.84

(continued)

No	Hospital	Budget (Baht)	No	Hospital	Budget (Baht)
34	Phuthachinarat phetsanulok Hospital	63,763,336.85	52	Yala Hospital	86,760,221.91
35	Phrae Hospital	40,005,983.24	53	Betong Yala Hospital	13,861,123.60
36	Nan Hospital	43,571,985.53	54	Trang Hospital	2,263,080.82
37	Lampang Hospital	58,012,493.11	55	Phatthalung Hospital	3,168,389.92
38	Chiangraiprachanukhrau Hospital	60,434,394.13	56	Satun Hospital	21,118,229.09
39	Srisungwan Maehongson Hospital	31,370,494.93	57	Songkhla hospital	29,114,982.59
40	Lamphun Hospital	22,402,203.88	58	Hadyai Songkhla Hospital	50,339,880.84
41	Phayao Hospital	66,285,144.73		Total budget	2,443,462,083.90
42	Cheangkhum Phayao Hospital	23,443,007.39			
<b>SOUTHERN REGION</b>					
43	Suratthani Hospital	92,412,848.54			
44	Chumphon Hospital	17,323,321.36			
45	Ranong Hospital	49,813,238.34			
46	Phangnga Hospital	37,917,297.10			
47	Takuapha Phangnga Hospital	46,394,538.12			
48	WicharaPhuket Phuket Hospital	59,758,174.62			
49	Krabi Hospital	7,604,193.93			
50	Narathiwat Hospital	46,218,915.56			
51	Suhaikolok Narathiwat Hospital	821,074.77			

Table 5.4 List of Hospitals : More Allocated Budget

No	Hospital	Budget (Baht)	No	Hospital	Budget (Baht)
CENTRAL REGION			18	Nongbualamphu Hospital	54,965,895.25
1	Phranungklao Nonthaburi Hospital	58,509,252.32	19	Sakhonnakhon Hospital	75,581,561.77
2	Pathumthani Hospital	20,015,446.63	20	Sanpasitprasong Hospital	96,697,158.07
3	Sena Phranakhonsriayuttaya Hospital	21,086,270.47	21	Amnatcharoen Hospital	24,868,675.82
4	Sena Phranakhonsriayuttaya Hospital	102,452,762.91	22	Nakhonphanom Hospital	6,909,506.68
5	Somdetphrasungkharat 17 Hospital	5,451,612.42	23	Mukdahan Hospital	76,466,308.05
6	Chonburi Hospital	1,828,031.32	24	Roi Et Hospital	129,222,124.94
7	Somdetphrayuparat Sakaew Hospital	58,383,006.65	25	Maharakham Hospital	44,509,710.54
8	Muang Chachoengsao Hospital	9,764,970.79	NORTHERN REGION		
9	Makaruk Kanchanaburi Hospital	15,270,098.61	26	Sawanpracharuk Nakhonsawan Hospital	38,662,941.27
NORTHEASTERN REGION			27	Kamphaengphet Hospital	80,977,430.67
10	Buriram Hospital	165,527,569.13	28	Phetchabun Hospital	127,747,425.07
11	Surin Hospital	127,644,753.59	29	Phichit Hospital	10,925,327.46
12	Maharat Nakhonratchasima Hospital	268,482,390.89	30	Chiangraiprachanukhrau Hospital	68,834,686.93
13	Sisaket Hospital	128,709,220.46	31	Nakhonping Chiangmai Hospital	209,563,356.80
14	Loei Hospital	14,243,444.30	SOUTHERN REGION		
15	Nongkhai Hospital	63,842,807.55	32	Kao Samui Suratthani Hospital	31,380,779.44
16	Khonkaen Hospital	108,197,806.83	33	Maharat Nakhonsrithammarat Hospital	62,439,499.49
17	Udonthani Hospital	110,626,866.09	34	Pattani Hospital	23,673,384.69
			Total budget		2,443,462,083.90

The study of the 6 equations was to set patterns of equitably budget allocation for general and regional hospitals. The variables in each pattern have both advantages and disadvantages as follows :

#### 1. Hospital need in term of input variables

- MTR : mortality rate is one of the more powerful measures of health status. It reflects health service, curative care, health prevention and health promotion in each hospital. This study used mortality data in each province to calculate weight population. So the data is not specifically for each hospital. On the other hand, the number of dead may be due to low quality health service in each hospital. To avoid this the study assumes that every hospital has equally efficient performance.

- The number of beds is the factor which shows health service size in each hospital, as the number of health personnel and quantity of equipment is related to the number of beds and has an effect on budget allocation. But the number of beds does not show utility of beds. So it dose not show the scale of activity in the hospital.

#### 2. Hospital need in term of output variables

- The variables are number of outpatient visits, number of day admissions , and number of referrals. Budget allocation will consider these variables and set costs in line with level of activity. So budget allocation is related to out put. However, this the study does not use unit cost for budget allocation, and does not consider the quality of health service.

#### 3. Social factors

- The variables are number of people aged 0-12 years, number aged more than 60 years and provincial income gap. These variables are very important for budget allocation because social factors affect health needs. This study used provincial data for social factors to calculate weight population, so again the data is not specifically related to individual hospitals.

#### 4. Non-budget

- Non-budget is shows the ability to pay of the people in each region. Hospitals may get more revenue because they are located in high income areas or receive large donations. This study assumes that these hospitals need less government subsidy . On the other hand, if the government decreases the budget of these hospitals, management in these hospitals may be less motivated.

#### 5. Number of people insured in social security schemes

- The number of people registered of insured in social security scheme shows that they can occur expense of health care themselves. And it means that if the hospital has more people in this group, it helps the hospital financially because this group uses less of the health service budget. So the government should allocate less budget to such hospitals, but again this may lead to unmotivated management



## 5.2. Conclusion

This study has analyzed the equity of budget allocation in terms of health service for general and regional hospitals considering pattern of budget allocation using economic theories of equity. This means that if the hospital has equality of input and equity output, the hospital should receive equal budget allocation. The hospitals are general and regional hospitals under MOPH's responsibility. The study's objectives are (1) to analyze the 1997 patterns of budget allocation from MOPH to general and regional hospitals in Thailand (2) to apply the weight population according to a set of pattern of budget allocation from MOPH to general and regional hospitals.

The study is divided into 2 steps as follows :

The first step is to analyze the existing budget allocation criteria of general and regional hospitals under MOPH's responsibility which comes from 2 offices namely the Provincial Hospital Division and the Health Insurance Office. These criteria are :

1. The Provincial Hospital Division's budget is allocated as follows :

1.1. Allocated by scale of service. The number of beds in each hospital is used as the criterion to set personnel and supplies in the hospital. The hospital receives a budget in line the actual expense of personnel salary, allowance and hospital supplies. Such expenses will be related to the number of bed in each hospital.

1.2. Allocated from MOPH to regional and general hospitals by line item system. The expenditure by line item can be controlled by reporting budget expense according to line item of each hospital.

1.3. Allocated by Relative Weight of DRG. This method is applied to estimate the cost of service by 43 hospitals.

1.4. Allocated by output of each hospital. The budget is allocated to follow the output of health service by using the output of the health service last year to predict the necessary budget in the following year such as : the number of in patients, and number of out patients.

2. The Health Insurance Office budget is allocated per of population : 273 baht per insured person per year.

The second step is to analyze the equity of budget allocation in terms of input and output variables such as social factors, non-budget, referral rates and social security scheme rates.

The study found that a weighted population value of 6 equations get the closely value. Moreover, the calculate rate ratio of expected and actual budget allocation in each region shows that the northeastern region hospitals should receive 84.21% more budget , the northern region hospitals should receive 30% more budget , the central region hospitals should receive 29.41% more budget and the last is southern region hospitals should receive 21.05% more budget. The study also found that the ratio's measurement of budget allocation between regional and general hospitals shows that two type hospitals are closely 1 unit. So, the expected and actual budget are closely matched.

From the study, it was found that most hospitals received expected budget greater than the actual budget. However, MOPH cannot cut the excessive budget from those hospitals. So, the budget will be increased because for some hospitals which have the expected budget less than the actual. And should receive more the total budget is 2,443,462,083.90 bahts. The first priorities for budget allocation is to the Northeastern region.

In conclusion, using the proposed 6 patterns for budget allocation is one method of allocation equity for regional and general hospitals relative to the health needs of population. As the study results, the factors used in the 6 patterns have similar influence due to the formulas used in each equations but the variables actually in each patterns have both advantages and disadvantages.

### 5.3 Limitations of the study

This study is a basic analysis which a wide scope by determining the main variables and using them in the patterns, so these should be many way in which to reduce the limitation of this study. We conclude :

1. Data is limited because this study wants to calculate budget for equity to general and regional hospitals but some data is provincial data because there is no specific data such as MTR, age 0-12 year and age more than 60 years available at the hospital level.

2. This study determines the average income of people in each province and uses it as a factor of budget allocation, but the average income is limited because it is not current and income is not equally distributed.

3. Most of the data is based on budget allocation in 1997. Some hospitals received more or less budget in 1996. So the study doesn't take into account the budget of the year of the study.

### 5.4. Recommendation

The weighted population is the principles of budget allocation for equity to regional and general hospitals. It was based on policy planner implication for allocating budget. The formulas and the variables used in this study were patterns for budget allocation which have both advantages and disadvantages. The policy planner of government can adjust these patterns of budget allocation but the process of budget allocation should be made clear.

### 5.5. Suggestions for future study

1. This study considers only general and regional hospitals which are the responsibility of MOPH. It does not consider other services in government and private hospitals or allocated budget towards developing people's health in general view. So it should consider distributing resources and consider about the other health offices.

2. This study objective is to equitably allocate budget for general and regional hospitals. It was found that some data should be added, subtracted and improved in order to increase the equity of hospital resources related to the populations need. Such variables are as follows :

- Mortality rate was one of the most powerful measures of people health status. it should be specific data at each hospitals as opposed to provincial data.

- Non-government budget and number of people insured in social security schemes are factor used to account for hospitals' own revenues. If the hospital has non-government budget or has enormous number of insured under the social security scheme, it should receive less budget. This may cause management to be less motivated in these hospitals.

- Cost per unit should be considered in calculating weight population because it closer to real expenditure.

- Age adjustment rating scale : It can show the health needs of the population and accordingly to assess the equity of budget allocation for hospital.

3.The study of budget allocation should be analyzed for 3-5 years of time period of study owing to the fact that hospitals received more or less budget in some years.