

Chapter 5

ANALYSIS OF THE DETERMINANTS OF POVERTY IN THAILAND

5.1 Introduction

Having seen in Chapter 4 that, during 1968/69 and 1975/76, poverty existed in Thailand, that poverty was alleviated to some extent, and that certain characteristics were common to the poor, the questions to be asked now are: what factors caused poverty to exist? what factors helped alleviate some degree of poverty? why was there regional disparity in poverty incidence? why was the Northeast the poorest region and the Central (which includes Bangkok) the least poor region? why did some regions do better than others in alleviating poverty? why were the poor concentrated in rural areas and were mainly farm operators, farm workers, and general workers? why were poor families large and why were the poor little or not educated? etc..

The answers to these questions will be sought in this chapter by examining and analysing the determinants of poverty within the framework of Jorgenson's model of the low level equilibrium trap and Sen's entitlement approach. In other words, available data and evidence on population growth, technological progress, and entitlements (especially of land) during the 1960s and 1970s will be examined and then finally brought together in an integrated analysis.

5.2 Population Growth

5.2.1 Population size, regional distribution of population, population growth rates and sources of population growth

This section will be a review of Thailand's national and regional demographic situation since the Second World War and especially in the 1960s and 1970s.

Population size, regional distribution of population and population growth rates

Thailand's population in 1947 was estimated to be about 17 million. However, it grew by about 9 million during 1947-60, by about 8 million during 1960-70 and by about 10 million during 1970-80 and by 1980, it was estimated to be 44 million (Table 5.1). This is not surprising since the

population had been growing at a high but declining rate over the past three decades. The average annual growth rate was 3% during the 1950s, 2.7% during the 1960s, and 2.5% during the 1970s (Table 5.2). The Thai government hopes that by 1986, the population growth rate will be reduced to 1.5%.

Among the regions, the Northeast had the largest population followed by the Central (15.5 million and 9.6 million respectively in 1980). However, population was more dense in the Central since in area the Central region is 20.2% of total area, while the Northeast region is 33.1% of total area. The North had almost the same population (8.9 million in 1980) as the Central, but since in area it is as big as the Northeast, population density was the lowest among all the regions. The South which is the smallest in area (13.6% of total area) was also smallest in population size (5.6 million in 1980). But population density in the South was higher than in the North (Tables 5.1, 5.3). Table 5.1 also shows that as regional population size changed, regional population distribution also changed. However, the changes have been small and the overall population distribution have been generally stable. During 1970 and 1980, the relative shares of the South and Central (including Bangkok) increased while that of the Northeast and North declined.

These variations in relative share of population in the regions can be explained to some extent by the regional population growth rates presented in Table 5.2. The regional population growth rates of the North and Northeast declined in 1970-80 to the levels of 1940-50. The average annual population growth rate of the South did not change during 1960-80, but the population growth rates for all regions had declined from previous peak levels. All regions except the Northeast had the most rapid population growth rate in the 1950-60 period. For the Northeast, the most rapid population growth rate was in the 1960-70 period.

The urban-rural population distribution by region is presented in Table 5.4. In 1980, all regions except Bangkok metropolitan area were around 90% rural. The Northeast was the most rural (96%) and the South the least rural (87.4%). Marked regional differences in urbanization between the Central and the other regions can also be seen. However, on the whole, the proportion of population living in urban areas has increased steadily over the 1960-80 period.

Table 5.1
Population Size and Population Distribution,
1947, 1960, 1970 and 1980, by Regions

Region	Population (thousands)				Percentage Distribution			
	1947	1960	1970	1980	1947	1960	1970	1980
Bangkok	1,174	2,136	3,077	4,711	6.8	8.1	9.5	10.6
Central (excl. Bangkok)	4,214	6,135	7,535	9,577	24.4	23.4	21.4	21.6
North	3,627	5,723	7,449	8,945	20.9	21.8	21.7	20.2
Northeast	6,157	8,992	12,025	15,461	35.6	34.2	35.1	33.1
South	2,145	3,272	4,272	5,584	12.4	12.5	12.4	13.6
Whole Kingdom	17,381	26,258	34,397	44,278	100	100	100	100

Source: ESCAP (1982), p. 13, Table 3.

Table 5.2
Population Growth Rates, 1940-1980, by Region
 (percentages)

Region	1940-50	1950-60	1960-70	1970-70
Bangkok	-	6.0	3.7	4.3
Central (excl. Bangkok)	-	-	2.1	2.4
North	1.8	3.1	2.6	1.8
Northeast	2.5	2.7	2.9	2.5
South	2.2	3.0	2.7	2.7
Whole Kingdom	2.4	3.0	2.7	2.5

Source: ESCAP (1982), p. 14, Table 4.

Table 5.3
Population Density by Region, 1960, 1970 and 1980
 (population per sq.km.)

Region	1960	1970	1980
Central	80	102	137
North	34	44	53
Northeast	53	71	91
South	47	61	80
Whole Kingdom	51	67	86

Source: Calculated from ESCAP (1982), Tables 2 and 7.

Table 5.4
Percentage Distribution of Rural and Urban Population
by Region, 1960, 1970 and 1980

Region	1960		1970		1980	
	Rural	Urban	Rural	Urban	Rural	Urban
North	93.6	6.4	94.1	5.9	92.5	7.5
Northeast	96.5	3.5	96.3	3.7	96.0	4.0
Central	72.6	27.4	69.7	30.3	60.1	39.6
Central (excl. Bangkok)	90.8	9.2	90.5	9.5	90.1	9.9
South	89.9	10.1	89.3	10.7	87.4	12.6
Whole Kingdom	87.5	12.5	86.8	13.2	82.7	17.3

Source: ESCAP (1982), Table 7.

The urban and rural population growth rates presented in Table 5.5 explain to some extent the rural-urban population distribution changes. During the two periods, the urban population growth rates exceeded the rural population growth rates for all regions except the North during the 1960-70 period. However, although in the 1960-70 period the rural population growth rate almost kept pace with the urban population growth rate, the differentials increased in the 1970-80 period. In the 1970-80 period, the urban population growth rate in the Central (including Bangkok) grew faster than the other three regions. Bangkok clearly dominated the urban system in Thailand since excluding Bangkok, the Central region's urban population growth rate was less than that of the other three regions. Comparing the rural population growth rates in the two periods, it can be seen that the growth rates slowed down except for the Central (excluding Bangkok) region. On the other hand, the urban population growth rates, except for the Northeast, increased.

Sources of population growth

Population growth can be brought about by natural increase and/or net migration. The natural rate of growth of population is found by subtracting the death rate (deaths per 1000) from the birth rate (live births per 1000) over a year. The net migration rate is the excess of immigration over emigration of a country or region during a year.

Available data on the sources of population growth by region and location in Thailand for some years between 1955 and 1976 are presented in Table 5.6. Data in this table suggests that natural increase has been the dominant factor in population growth for the country as a whole. However, this is not true for the regions which differed substantially in their rates and sources of population growth. For the country as a whole, natural increase resulted more from a downward trend in mortality than in fertility. During 1964-67 and 1974-76, the percentage decline in CDR (18%) exceeded the percentage decline in CBR (12%).

Regional rates of natural increase although fairly uniform in 1964-67 diverged substantially by 1974-76. The rate of natural increase fell in all regions except the Northeast. The Northeast had the highest rate of natural increase in both 1964-67 and 1974-76. However, it lost some out-migrants between 1955-60 and 1965-70. The North, however, experienced a dramatic decline in natural increase mainly due to fertility decline. But it gained some population through migration. For the South,

Table 5.5
Population Growth Rates, by Region and Location,
1960-70 and 1970-80
 (percentages)

Region	1960-70		1970-80	
	Rural	Urban	Rural	Urban
North	2.8	1.8	1.6	4.2
Northeast	2.9	3.6	2.5	3.3
Central	2.1	3.5	1.5	5.7
Central (excl. Bangkok)	2.0	2.4	2.4	2.8
South	2.6	3.2	2.5	4.3
Whole Kingdom	2.6	3.4	2.1	5.3

Source: ESCAP (1982), Table 13.

the high rate of natural increase was offset by net out-migration in 1965-70. The Central (excluding Bangkok) experienced a fall in the rate of natural increase mainly due to a dramatic fall in the CDR. It also lost out-migrants in both 1955-60 and 1965-70. For Bangkok, most of the increase in population over the 1960-75 period can be explained by migration. It has extremely high rates of net migration.

Trends in mortality

Evidence given by data in Tables 5.6, 5.7 and 5.8 indicate that there has been a substantial reduction in mortality and an increase in life expectancy for the nation since the Second World War. Between 1964-67 and 1974-76 CDR declined by 18%. This decline may be due primarily to the lowering of the infant mortality rate which declined from about 84 infant deaths per 1000 births in 1964/65 to about 56 infant deaths per 1000 births in 1974/75. As for municipal areas (excluding Bangkok) and non municipal areas, although the percentage decline in CDR was the same (18%), CDR for municipal areas was much lower than for non-municipal areas.

The various regions of Thailand have differed in their level and trend of mortality. The North appeared to have the highest mortality in terms of both CDRs and infant mortality rates, while the Central region and particularly Bangkok had the lowest mortality. The CDR in all regions declined except for the South. Cochrane (1979) believes that the CDR in the South showed a rise probably because of under-reporting of deaths in 1964-67.

Trends in fertility

Table 5.6 shows that for the country as a whole CBR declined by 12% during 1964-67 and 1974-76. For the regions, CBR declines differed, with some regions having dramatic declines while others did not. CBR decline between 1964-67 and 1974-76 was much greater in the North and in the Central than in other regions (percentage declines were 36% and 23% respectively), but for the Northeast and the South, no great change was observed. As for municipal areas, CBR decline was greater than for non-municipal areas (16% as against 12%).

Table 5.9 shows the percentage change in fertility for age-controlled and age-specific fertility rates. For the country as a whole TFR and GRR showed a decline between 1964/65 and 1974/75, so also did age-specific

Sources of Population Growth, by Region and Location

Region/Location	Crude birth rate (per 1000)		Crude death rate (per 1000)		Percentage decline	Rate of Natural Increase (per cent)		Annual Net Migration Rate (per 1000)	
	1964-67	1974-76	1964-67	1974-76		1964-67	1974-76		
Bangkok	n.a.	31.6	n.a.	4.3	-	n.a.	2.7	+6.48	+10.95
Central (excl. Bangkok)	39.7	30.7	10.4	6.6	37	2.9	2.4	-1.59	-2.62
North	43.7	28.1	12.4	9.9	36	3.1	1.8	+1.05	+0.17
Northeast	43.5	42.8	11.4	9.8	2	3.2	3.4	-1.33	1.41
South	40.9	40.6	8.6	10.2	1	3.2	3.0	+0.57	-0.46
Municipal (excl. Bangkok)	29.9	25.2	5.6	4.6	16	2.4	2.2	n.a.	n.a.
Non-Municipal	43.2	37.9	11.3	9.3	12	3.2	2.9	n.a.	n.a.
Whole Kingdom	42.2	37.0	10.8	8.9	12	3.1	2.8	n.a.	n.a.

Source: ESCAP (1982), Tables 5 and 16.

Table 5.7
Infant Mortality Rates (per 1000), by Region,
1964/65 and 1974/75

Region	1964/65	1974/75	1982
Bangkok	-	31.0	n.a.
Central (excl. Bangkok)	94.0	49.5	n.a.
North	96.5	96.0	n.a.
Northeast	83.4	54.4	n.a.
South	48.5	60.4	n.a.
Whole Kingdom	84.3	56.3	51

Sources: Cochrane (1979), Table 9.
 World Bank (1984) (for 1982).

Table 5.8
Life Expectancy at Birth
(years)

Period	Males	Females
1937-47	37.0	39.7
1950-55	42.0	47.8
1955-60	46.4	51.8
1960-65	49.7	55.3
1965-70	52.9	58.3
1970-75	55.4	60.8
1982	61.0	65.0

Sources: Cochrane (1979), Table 8.
 World Bank (1984) (for 1982).

fertility rates for all women except for those in the youngest age group. As for the North and Central regions, TFR and GRR showed marked declines, while for the South TFR and GRR showed an increase probably due to increase in fertility of women in four of the seven age groups. A very small decline (0.3%) in TFR and no change in GRR in the Northeast were probably due to increase in fertility in the youngest age groups. For women under 30, the changes in age-specific fertility differed dramatically by regions. The North which had the greatest overall fertility decline, had declines in all age groups, whereas the South had increases in all age groups under 30. The Northeast and the Central (excluding Bangkok) showed fertility declines only in the oldest of the under-30 age groups. Fertility declines between 1964/65 and 1974/75 can therefore be attributed to declines in fertility in older women and differences in regional fertility changes can be explained by different changes in the behaviour of younger women.

Trends in migration

It was seen in Table 5.5 that population growth rates in urban areas had been higher than in rural areas. These differentials can be explained by internal migration. Migration is a major component of faster population growth in urban areas.

Table 5.6 shows that between 1955-60 and 1965-70, net immigration to Bangkok increased. For the Central (excluding Bangkok) and the Northeast, there was greater net emigration, and for the North there was lower net immigration. For the South, the change was from net immigration to net emigration but the rates were small. These net migration rates, unfortunately, do not show intra-regional migration. The low rates of net migration outside the Central region probably result in part from the fact that each region has changwats of both high emigration and high immigration which at the regional level cancel out to some extent.

5.2.2 Consequences of rapid population growth

In this section, macroeconomic consequences of rapid population growth in Thailand will be considered in terms of description of demographic structure and trends.

Age structure of the population

Variations in fertility, mortality and migration will change not only the size of the population, but also its age structure. If population is growing rapidly from natural increase, a large proportion will be

dependent children and therefore, the child dependency ratio (i.e. proportion of children below age 15 to economically active adults age 15-60) will be high. If migration is increasing, there will be a greater proportion of working-age population. However, size of dependency ratios and working-age population depends greatly on definitions of the age limits (age of entry and exit) of the labour force. In Thailand, since the participation of children (especially from poor families) under age 15 in the labour force are high (Marzouk, 1972, p. 34) the conventionally calculated dependency ratios are over-estimated while the working-age population is under-estimated.

The age structure in Thailand is summarized in Tables 5.10, 5.11 and 5.12. Thailand's population in 1960-70 was young, with about 45% of the total composed of children under age 15 and about 51% of the total in the 15-59 age group. This is the result of high fertility rates and the substantial fall in mortality rates particularly for infants and children in the previous decades. In 1981, however, the proportion of children under age 15 became smaller (39.4%) due to the decline in fertility during the 1970s. The effect of fertility decline can also be seen from a more detailed breakdown of the age structure. The proportion of children in the youngest age group fell from 18.6% to 13.5% between 1960 and 1981. It is however believed that in spite of fertility declines, Thailand will continue to have an economically inefficient age structure for the remainder of this century since the large cohorts of children born during the 1960s and 1970s will have reached child-bearing age in the 1980s and 1990s.

For the country as a whole, the child dependency ratio was high but declining, while the old-age dependency ratio was small and increasing. In 1960, the child dependency ratio was 88% while the old-age dependency ratio was 7%. This meant that for every 100 persons of working age, there were 88 children under age 15 and 7 old people over age 60, a total of 95 dependents. In 1970, dependency ratios changed a little towards the unfavourable side, but in 1981, the dependency ratios became favourable. The child dependency ratio fell to 71%, old-age dependency ratio increased to 9% and total dependency ratio was 80%.

Change in school-age population and labour force

The proportional declines in the proportion of children under age 15 were accompanied by large absolute increases in the size of that age

Table 5.9
Percentage Change in Fertility Rates by Region and Age,
1964/65 to 1974/75

Region	TFR	GRR	Five year age groups (up to age indicated)						
			19	24	29	34	39	44	49
Whole Kingdom	-18.0	-19.3	+27	-5	-16	-25	-31	-32	-40
North	-41.5	-43.8	-43	-40	-33	-41	-49	-50	-55
Northeast	-0.3	0	+82	+82	-4	-16	-15	-16	-45
Central (excl. Bangkok)	-20.9	-20.7	+64	+64	-23	-22	-39	-33	-40
South	+4.4	+6.9	+50	+50	+28	-17	-48	-36	+72

Source: Cochrane (1979), p. 21, Table 15.

Table 5.10
Summary Distribution of the Population by Age and Dependency Ratios,
Whole Kingdom, 1960, 1970 and 1981
 (Percentages)

Age group	1960	1970	1981
1. 0-14	45.1	44.8	39.4
(0-4)	(18.6)	(17.5)	(13.5)
(5-14)	(25.5)	(27.3)	(25.9)
2. 15-59	51.2	50.6	55.5
(15-29)	(26.2)	(26.9)	(29.6)
(30-44)	(15.9)	(14.9)	(16.6)
(45-59)	(9.1)	(8.8)	(9.3)
3. 60+	3.7	4.7	5.1
4. Total	100	100	100
5. Dependents (1+3)	48.8	49.5	44.5
6. Child dependency ratio (1÷2)	88	89	71
7. Old-age dependency ratio (3÷2)	7	9	9
8. Total Dependency ratio (5÷2)	95	98	80

Sources: Calculated from Cochrane (1979), p. 3, Table 2 (for 1960, 1970).
 Calculated from NESDB, Population Plan 1982-1986, Bangkok, 1981
 (for 1981).

Table 5.11
Population Composition
Index numbers for relative sizes of age groups
(size of age group in 1980=100)

	1960	1980	2000
Age 0-14	62	100	107
15-64	55	100	172
65 and over	51	100	207
Dependency ratio	90	77	55

Source: World Bank (1984).

group (Table 5.11). Also, while the proportion of child population declined, that of the school-age population (5-14 years) did not decrease, while that of the age group that includes pre-tertiary and tertiary population (15-19 years) continued to grow.

Another adverse effect of previous high fertility is the growth in the labour force or the working-age population (15-59 age group). It can be seen that large cohorts of children born during earlier decades had in 1981 reached working age. The proportion of economically active or working-age population in the total population increased from 51% in 1960 to about 56% in 1981. A detailed breakdown of the working-age group also shows the effect of earlier high fertility. In 1981, 30% of total population constituted the (15-29) age group while it was 26% in 1960. Table 5.11 shows that the relative size of working-age group increased more than the relative size of child population during 1960 and 1980.

The regional age structure summarized in Table 5.12 shows that the proportion of child population and old-age population were substantially different for different regions in Thailand. In 1980, the proportion of child population in the total population was highest in the Northeast and lowest in Bangkok. The difference was 14.3%. The proportion of children in total population for the Northeast and the South were higher, and in the Central, North and Bangkok it was lower than that of the country as a whole. This was also true for the proportion of infants (0-14 years) and school-age population (5-14 years). The highest proportion of children in the Northeast and South and the low proportion of children in Bangkok reflects the difference in fertility decline among regions and especially the high fertility rate in the Northeast in the previous decades.

On the other hand, the proportion of working-age population was highest in Bangkok and lowest in the Northeast. The difference was 13.4%. This proportion in the Northeast and South were lower than, and in the North, Central, and Bangkok were higher than that of the country as a whole. The differential in this proportion between Bangkok and the Northeast was quite substantial. The high proportion of working age population in Bangkok reflects the high rate of net migration in Bangkok.

Child dependency ratios are therefore high in the Northeast and South (83% and 75% respectively) and very low in Bangkok (44%). Old-age dependency ratios are not quite different among regions. In fact, old-age

Table 5.12
Age-Sex Summary Distribution of Population and
 (percentages)

Age Group	Whole Kingdom			Bangkok			Central		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
1. 0-14	38.2	39.3	37.1	29.1	30.3	28.1	36.1	37.7	34.4
(0-4)	(12.1)	(12.5)	(11.7)	(9.7)	(10.1)	(9.2)	(11.2)	(11.7)	(10.6)
(5-14)	(26.1)	(26.8)	(25.4)	(19.4)	(19.9)	(18.9)	(24.9)	(26.0)	(23.8)
2. 15-59	56.3	55.7	56.9	65.7	65.2	66.3	57.2	56.2	58.2
(15-19)	(12.0)	(12.0)	(11.9)	(13.5)	(13.4)	(13.7)	(12.0)	(12.1)	(11.9)
(20-59)	(44.3)	(43.7)	(45.0)	(52.2)	(51.8)	(52.6)	(45.2)	(44.1)	(46.3)
3. 60+	5.5	5.0	6.0	5.2	4.5	5.6	6.7	6.1	7.4
4. Dependents (1+3)	43.7	44.3	43.1	34.3	34.8	33.7	42.8	43.8	41.8
5. Child Dependency Ratio (1÷2)	68			44			63		
6. Old-age Dependency Ratio (3÷2)	10			8			12		
7. Total Dependency (4÷2)	78			52			75		

Source: Calculated from NSO, Statistical Handbook of Thailand, 1982.

Dependency Ratios, by Region, 1980

Total	North		Northeast			South		
	Male	Female	Total	Male	Female	Total	Male	Female
34.8	35.2	34.3	43.4	44.4	42.4	40.2	41.5	38.9
(10.5)	(10.6)	(10.4)	(13.8)	(14.0)	(13.5)	(13.3)	(14.0)	(12.7)
(24.3)	(24.6)	(23.9)	(29.6)	(30.4)	(38.9)	(26.9)	(27.5)	(26.2)
59.3	59.4	59.4	52.3	51.7	52.9	53.7	52.8	54.8
(12.5)	(12.6)	(12.5)	(11.2)	(11.3)	(11.2)	(11.8)	(11.8)	(11.8)
(46.8)	(46.8)	(46.9)	(41.1)	(40.4)	(41.7)	(41.9)	(41.0)	(43.0)
5.9	5.4	6.3	4.3	3.9	4.7	6.1	5.7	6.3
40.7	40.6	40.6	47.7	48.3	47.1	46.3	47.2	45.2
59			83			75		
10			8			11		
69			91			86		

dependency ratio in the Northeast was even smaller than that of the country as a whole and was the same as that in Bangkok. On the whole, the proportion of total dependents was highest in the Northeast (91%) and lowest in Bangkok (52%). Since the Northeast had a large proportion in the dependent ages and lost migrants who were primarily of working age, the problems implied by population growth in the Northeast would be more serious than in other regions.

Thus, the high dependency ratios, the fast growth in school-age and working-age populations can bring about economic and social consequences such as:

Consequences of high dependency burden

High dependency burdens associated with rapid population growth can reduce household savings. Since at any given level of output per worker, greater numbers of dependents cause consumption to rise, savings per capita should fall. However, for poor people, children are not considered as negative savings but are "savings" for old age, that is, children are security for old age (World Bank, 1984).

School requirements and capital widening

Growth of school-age children has a direct effect on expenditures on education. The demand for primary educational facilities and relatively more expensive secondary and tertiary educational facilities will have to be met. Also, since the poor are more likely to attend schools of lower quality (and to leave school sooner), rapid expansion of school systems to accommodate growing population will mean that the difference in skills between the poor and the rich will persist because of school quality differences. However, as lower fertility slows the growth of school-age population, it can ease the pressures on the education system. Less rapidly growing enrolment can produce considerable financial savings which can be used to improve school quality (World Bank, 1984).

Growth of labour force and capital widening

In contrast to school-age populations, whose rate of growth starts to slow 5 or 6 years after a fertility decline, the growth of working-age populations is more or less fixed for 15-20 years. Labour force will be increased not only by young entrants but also by an increase in women (with fewer births) seeking work. With a growing labour force, the stock

of capital (both human and physical) must continually increase just to maintain capital per worker and current productivity. If this does not happen, each worker will produce less using the reduced land and capital each has to work with. Productivity, and thus incomes, will then stagnate or even fall.

Rapid labour force growth can also lead to various forms of unemployment. There can be open unemployment for new entrants to the labour market (youth unemployment), but in LDCs, many will be underemployed (part-time workers and low-productivity workers whose skills would permit higher earnings if better jobs were available). In other words, rapid labour force growth will condemn a large portion of labour force to low-productivity, low-wage job in agriculture as in urban-informal services (such as handicraft production, hawking). Rapid labour force growth can also exacerbate income inequalities, particularly if many new young workers have little education. When a large proportion of workers are young and inexperienced, their productivity tends to be lower, their starting wages will tend to be lower, and they will have to compete with each other (World Bank, 1984).

5.2.3 Determinants of fertility

The majority of the poor in Thailand were seen to have large families (Section 4.3). Also, in 1974/75, fertility was still high even though it had declined, the percentage of decline being different for different regions (Section 5.2.1). Therefore, the questions to which answers should be sought are: why was fertility high in Thailand? what factors caused the decline in fertility in Thailand? what factors are generally considered as determinants of fertility?

In Thailand, in the 1960s and 1970s, fertility was high on the whole, but higher in the Northeast and South than in other regions, and higher in rural than in urban areas. High fertility in Thailand could possibly be explained by the "new home economics" of the family which views children as both consumer goods and investment goods (Todaro, 1981, p. 191). This means that, the benefits of children especially to poor families in developing countries are twofold: children provide utility or satisfaction to parents as well as contribute significantly to family income or household production. Rosenweig (1978, p. 332) believes that econometric analysis of data from Thailand contained evidence of a positive relationship between

children's employment and family size. For the poor who are uneducated, and physically weak, the large family may constitute the only source of "social security". There may be no motivation on the part of poor families to want to limit their size.

Fertility decline occurs when people are motivated to have fewer children and/or when people are offered better means of containing their family. These two, people's motivation and availability of modern contraceptive technology, interact to some extent. If motivated people have easy access to modern contraceptive technology, fertility decline can come about easily. If on the other hand, people are not motivated to limit their family size, fertility will not decline even when contraceptive devices are readily available. The decision to limit family size can be made independently (individual decision), through social pressure, or through both. The Peoples Republic of China (PRC), is a striking example of a case of achievement of fertility decline through social pressure. The people of PRC were pressured socially to limit their family size (more recently, to have one-child families), the result being a halving of the birthrate in less than two decades to a level of below 20 per 100 by 1980 (McNicoll and Nag, 1982, p. 131).

Factors that motivate people to lower their demand for children can be economic factors and non-economic (social, cultural, political) factors. They can be classified as being behavioural and/or biological (although in practice the distinction is a difficult one to draw, except for a factor such as the age of marriage which is biological). They can be factors induced by economic development and by family planning programmes. Family planning programmes, however, help fertility reduction by improving the supply of the means to limit fertility.

Determinants of fertility decline in LDCs are generally thought to be: own-family and community infant and child mortality; education of men and women, but especially of women, and employment opportunities for women; family income levels and income distribution; average age of marriage; urbanization; old-age social security schemes; family planning services (making contraceptives available) availability of resources such as farmland. Reducing infant and child mortality can induce lower fertility. Birdsall (1977, p. 146) believes that almost all studies of the determinants of fertility indicate a positive effect on infant mortality on fertility. One reason for this is that parents want to replace lost children and

insure themselves against future child loss. This replacement effect is found to be strong in poor countries. Thus, in the long run, reduced infant mortality is thought to reduce fertility.

Educating parents, especially the mother or potential-mother, and improving employment opportunities for women can reduce fertility. Female education is believed to bear one of the strongest and most consistent negative relationships to fertility. This is because female education tends to raise the age of marriage (i.e. delays marriage for women), may improve the likelihood that a woman has knowledge of and can use modern contraceptives, and has intangible effect on the woman's ability to plan her interest in non-familial activities. When employment opportunities for women to work in non-agricultural wage employment are improved, fertility decline can be accelerated since women will be offered activities other than child rearing. Good earning opportunities can increase the age of marriage for women (Birdsall, 1977, p. 147).

Raising income levels of the poorest groups and achieving greater equality in income distribution can have fertility-reducing benefits. Family income levels of the poor can be raised through increased employment and earnings of husband and wife and/or through the redistribution of income and assets from rich to poor. Evidence shows that with higher incomes, parents will tend to substitute child "quality" for "quantity" by investing in fewer, more educated children whose eventual earning capacity will be much higher (Todaro, 1981, p. 192). More income can also bring about increase in status which may raise the demand for material goods which low income groups could not purchase before and therefore demand for children will be lower. The World Bank (1979) found evidence of a significant relationship between lower birthrates and less inequality in income distribution. On the other hand, Eberstadt (1980, p. 49) believed that equalising income distribution, was neither a necessary nor a sufficient condition for reducing fertility, since in countries like Mexico, Brazil and the Philippines, fertility had dropped against a background of rising incomes, while in countries like Burma, there had been more equalisation in income distribution, yet fertility had declined only slightly

Raising age at marriage can lead to fertility decline. This is true especially for the majority of women in developing countries where marriage is a prerequisite to child bearing. An increase in the female age at marriage can shorten the women's reproductive period and therefore, lessen the number of children born to her. Women who marry late may have fewer

children because of greater education and employment opportunities which directly reduces fertility and also because they may have more time to explore interests beyond family and childbearing, interests which they take with them into married life and which moderate their fertility goals. The PRC has placed major emphasis on later marriage as part of its birth reduction programme. In 1980, the government raised the legal minimum ages for marriage to 20 and 22 for females and males respectively (World Bank, 1984, p. 116). For Taiwan, fertility decline of CBR falling from 6 to 3 children per women during 1959-75 was accomplished by a slow rise in the age of marriage (T. P. Schultz, 1981, p. 53).

Urbanisation can indirectly lead to fertility decline. According to the World Bank (1984, p. 112), urban dwellers have access to better education and health services, a wider range of jobs, and more avenues for self-improvement and social mobility. They also face higher costs in raising children. As a result, urban fertility is lower than rural fertility, on average between 1 and 2 births per mother. The urban woman was also seen to marry on average, at least 1.5 years later than the rural woman. The idea of controlling fertility and the means of doing so has also spread more quickly in urban areas.

The development of old age and other social security schemes outside the extended family network to bridge economic dependence of parents on their offsprings can lower birthrate among the poor. The instruments for old-age security can be provident funds and social insurance. According to the World Bank (1984, p. 112), in a rural area of southern Mexico, social security programmes extended to sugarcane workers led to a 10% decline in fertility, and in India, participation in a provident fund was associated with later marriage.

Well-executed family planning programmes which provide both the education and the technological means to regulate fertility for those who wish to regulate it, can speed up fertility declines. As modern contraceptive technology has become more and more available, increasing use of contraceptives has led to fertility declines in recent years. Family planning programmes, apart from spreading contraceptive technology have also included programmes for giving incentives and disincentives to encourage people to have fewer children. Incentives and disincentives provided direct and voluntary trade-offs between the number of children and rewards or penalties.

The above mentioned factors have more or less accounted for fertility declines in LDCs. Except for family planning programmes which improves the supply of the means to limit fertility, the rest lowers the demand for children by raising the standard of living of the poor. And, while factors such as age at marriage and contraceptive use can bring about immediate effects in fertility reduction, factors such as education of women and employment opportunities for women can bring about fertility reduction gradually only.

It has been of interest to development economists and demographers alike as to which of these determinants accounted for fertility decline in Thailand since the mid-60s. Factors that were believed to have brought about fertility decline and fertility differences among regions during 1960-78 were reduction of infant and child mortality, higher literacy or education of women, higher female employment opportunities, higher incomes, higher age at marriage, urbanisation, availability of farmland, family planning programmes and more contraceptive use.

Cochrane (1979) used regression analysis to examine the factors that were responsible for fertility decline between 1960 and 1970. She found increased education, urbanisation and reduced availability of land to be the most relevant variables. Her regional analysis indicated that higher literacy facilitated fertility decline especially for the North and for women age 30-39 in the kingdom as a whole, that scarcity of farmland also served to depress fertility, and that urbanisation in 1960 was significantly related to a fall in the number of children born between 1960 and 1970 in the Central region only.

Knodel and Prachuabmoh (1974) researching on the demographic aspects of fertility for the same period, found that there was a strong inverse relationship between age at first marriage and cumulative fertility in both rural and urban samples. They mentioned that the average age at first marriage was lowest for women in rural areas (20.6 years) and highest for women in Bangkok (21.7 years) and the difference was small between provincial urban residents (21.3 years) and those of Bangkok. They also found a direct association between fertility and infant mortality in both rural and urban areas. They also believed that rural infant mortality substantially exceeded urban levels and to some extent mitigated the differences in family size.

Todaro (1981, p. 192) believed that statistical studies on fertility in Thailand and some other countries (Taiwan, Chile, the Philippines) have given a certain credence to the economic theory of fertility. In other words, there was evidence that high female employment opportunities and greater school attendance especially at the primary and early years of secondary schooling, were associated with lower levels of fertility. As women became better educated, they tended to earn a larger share of household income and to produce fewer children. There was evidence also of a strong association between declines in child mortality and the subsequent decline in fertility. Evidence also showed that with higher incomes, parents tended to substitute child "quality" with "quantity" and have fewer more educated children.

It is not clear which factors contributed most to fertility decline during 1960-70, but after 1970; the government's family planning programmes, officially started in 1970, and the subsequent increase in use of contraceptives, accounted for a large percentage (86%) of the decline (Table 5.13). The government's family planning programme apparently accelerated fertility decline from 8% between 1960 and 1968 to 15% between 1969 and 1975 (Cochrane, 1979, p. i). Even so, family planning programmes in Thailand in 1972 were considered to be weak and was classified as moderate only in 1982 (World Bank, 1984, p. 200, Table 6).

Contraceptive use in Thailand increased at a fast pace in the 1970s. For example, the proportion of married women using contraceptives rose from 14% (33% urban and 11% rural) in 1968 to 37% (49% urban and 35% rural) in 1975 (Cochrane, 1979, p. 25), and in 1981, 57% of married women aged 15-49 (64% urban and 55% rural) were using contraceptives (World Bank, 1984, p. 127). Family planning availability was also markedly different after 1970. In 1968/69, only 48% of rural women and 74% of urban women had heard of at least one method of contraception, but by 1975, the percentages had increased to 96% and 98.9% respectively (Cochrane, 1979, p. 25). These facts imply that women in urban areas tended to use contraceptives more than women in rural areas. It was also found that women with more education tended to use contraceptives more than women with no education. In the early 1970s, the rates of acceptance among women with 5 or more years of education was 65% while that among women with no education was 43% (Birdsall, 1980, p. 68).

Acceptance rates also differed by region in the post-1970 period. Table 5.14 shows that in 1975, regional differences were dramatic with

Table 5.13

Accounting for Fertility Decline in Thailand, 1968-78

	Initial fertility rate	Final fertility rate	Percentage of reduction by contributing factor				
			High age at marriage	Reduced breast-feeding	More use of contraception	More induced abortion	All other factors
Thailand	6.1	3.4	11	-17	86	16	4

Source: World Bank (1984), p. 115, Fig. 6.5

Table 5.14

Selected Factors Affecting Contraceptive Use by Region, 1975

	North	Northeast	South	Centre	Bangkok
Children ever born	3.8	4.3	4.1	3.6	3.2
Desired family size	3.3	4.1	4.1	3.4	3.4
Women wanting no more children (%)	62	62	45	56	41
Non usage of those wanting no more children(%)	48	66	85	55	42
Women who have a potential contraceptive demand	30	40	38	31	17
Current usage (%)	44	30	18	45	50

Source: Cochrane (1979), p. 33, Table 21.

the North, Central and Bangkok regions having contraceptive usage rates 2.5 times that of the South. The Northeast was in an intermediate position. Desired family size also differed dramatically with the Northeast and South having family-size goals of about 0.7 children greater than in other regions. Even so, there was accelerating new acceptance in the Northeast in 1975 and 1976, the new acceptance rates being higher than in the Central (Cochrane, 1979, p. i).

In 1978, contraceptives were made available in Thailand: 37% through government programmes, 35% through other publicly funded or subsidized programmes, 18% through the private sector and the remaining 10% had "no source or other". (World Bank, 1984, p. 151, Table 7.5).

5.2.4 Determinants of mortality

Data in Section 5.2.1 indicated that the rate of natural increase in Thailand's population between 1964-67 and 1974-76 fell, more due to the fall in CDR than the fall in CBR, that the decline in mortality (in terms of CDRs and infant mortality rates) varied among regions, and that for Thailand's population, life expectancy at birth had also increased. What factors are generally considered to be determinants of mortality in LDCs? What factors brought about mortality decline in Thailand since the 1950s? These questions need to be answered.

Mortality is determined by the interaction of three sets of factors: public health services and public health technologies, health and environmental services, and an array of individual characteristics such as income and education (Birdsall, 1980, p. 16)

Public health services affect mortality regardless of individual behaviour. Public health services include the provision of public health facilities and the application of modern medical technologies. They are, for example, immunisation against infectious diseases, vector eradication, chemotherapy. Public health technologies have to be embodied in social programmes in order to affect the mortality of masses in LDCs. It was rapid technological advances in modern medicine and the spread of modern public measures that contributed most to mortality decline in LDCs after the Second World War (Todaro, 1981, p. 160).

Health and environmental services reduces the cost of health to individuals but requires some individual response. They are, for example, provision of clean water supplies (such as piped water) and sewage disposal facilities

(such as flush toilets). In most LDCs, water supply improvements have lagged behind other improvements. This may explain why diarrheal disease remained relatively more prominent as a contributor to total mortality in LDCs than it was in European countries at the same general mortality level (Preston and Nelson, 1974). Diarrhea is considered to be a disease of the poor, and in fact, primarily of poor children, and is usually found along with malnutrition. It is in some sense caused by lack of access to safe water, to simple health services, and to the basic education which could compensate for difficult living conditions.

Individual characteristics include both income, which affects health through food consumption and housing, and education, which affects the spread and efficiency with which individuals respond to health and environmental services. It is generally believed that poor nutrition or malnutrition have been an important factor underlying high mortality rates in LDCs. It is also common knowledge that there are high infant and child mortality rates among children whose mothers have no education. Child mortality rates are also known to be higher in rural than in urban areas. Therefore, with higher household incomes, increasing literacy rates, and urbanisation can come improved nutrition, better sanitary conditions, and consequently, mortality declines.

Which among these factors contributed most to mortality declines in LDCs after the Second World War, has been a question which some economists have tried to find answers. Preston (1980), Birdsall (1980), Todaro (1981) and the World Bank (1984) were all in agreement to the fact that before the 1970s, public health technologies and programmes (such as malaria spraying and vaccinations) contributed most to mortality declines. Birdsall (1980, p. 17) believes that the benefits from these services have to a large extent been fully reaped. On the other hand, mortality from diarrhea was still high in LDCs which meant that for the majority who are poor in LDCs, there was still lack of access to clean water supply, simple health services and basic education on health and sanitation. Thus, to have continued decline in mortality, changes in individual behaviour, changes facilitated by increasing income and education, and improved access to basic health services were required. These factors are believed to be closely associated with economic development. Whatever answers have been given to the question of mortality decline, there is still some dispute as to whether mortality declines are principally by-products of social and economic development or of technological change, whether

mortality declines are a product of changes in private consumption or of public programmes and whether mortality declines were brought about by preventive measures or curative ones.

In Thailand, which among the above mentioned factors were responsible for mortality decline and differences in mortality decline among regions? Although it was accepted among researchers that death statistics in Thailand were not of good quality, there has been attempts to use available data to analyse the determinants of mortality in Thailand.

Cochrane (1979) believed that mortality decline of almost 50% during 1945-55 was due, at least in part, to the malaria eradication programme which began in 1949. This programme resulted in malaria mortality falling from 22% of total mortality in 1947 to 7.7% in 1955. Malaria dropped from its position as a major cause of death in 1947 to seventh position in 1970. Dysentery and diarrhea also dropped substantially as contributors to mortality from being responsible for 13.2% of deaths in 1947 to 2.8% in 1970. Chomchai (1972) also believed that modern medical technology and expansion of health facilities contributed most to mortality decline between 1955-65.

Table 5.15 shows that education of the mother and urban residence seem to be associated with large differences in infant mortality and life expectancy. In 1970, at each educational level, the urban population had higher life expectancy than the rural population, this difference being largest among the least educated and amounted to 13 years. Every increment in the mother's education raised life expectancy regardless of residence, but the difference was more striking in rural areas. This urban-rural difference was probably the result of higher incomes and better access to health care in urban areas.

It was indicated in Section 5.2.1 that in 1975, the North appeared to have the highest mortality particularly in terms of infant mortality rates. On the other hand, the Central region and Bangkok had the lowest mortality in terms of both CDRs and infant mortality rates. The Northeast, surprisingly, had mortality lower than the South where incomes were higher and health facilities more abundant. However, both the South and the Northeast were low on piped water and flush toilets (Sections 3.4.1 and 3.4.3).

Table 5.15
Estimates of Infant Mortality and Life Expectancy, 1970,
by Education of Mother and Residence

	Infant mortality (per 1000)	Life expectancy
Non-municipal areas (rural)		
No schooling	87	54.6
Elementary	71	58.2
Secondary or university	27	71.0
Municipal areas (urban)		
No schooling	38	67.6
Elementary	30	70.1
Secondary or university	16	75.2

Source: Cochrane (1979, p. 16).

In spite of her awareness of the unreliability of health and death statistics in Thailand, Cochrane (1971, p. 15) attempted to examine how various factors were related to mortality levels for regions. In simple correlation, she found that income levels for the North, literacy for the South, and greater urbanisation for the Central seemed to be most important in explaining differentials in mortality. In multiple regression analysis, the results showed that only literacy in the South and piped-water in the Central were significantly related with lower mortality.

It therefore appears that especially after 1970, on the whole, mortality decline in Thailand was brought about by improvements in income levels, education, urbanisation, and basic health services such as supply of piped-water. However, it was apparent that basic health services have yet to be improved in rural areas, since one goal of the Fourth Plan was to reduce mortality in rural areas by increased sanitation and piped water.

5.2.5 Determinants of internal migration

Data in Section 5.2.1 has indicated that in Thailand, during 1960-80, urban population rate of growth was higher than rural population rate of growth for all regions, and that Bangkok's population rate of growth was highest amongst all regions. This implies that migration into urban areas was responsible for the higher rates of urban population growth and that Bangkok was the single most popular destination for migrants.

It was estimated that about 40% of urban growth between 1970 and 1975 was due to migration. However, urbanward migration was believed to constitute only a small proportion of all migration in Thailand. Seventy-two percent of all changes of residence during 1965-70 were believed to have taken place between non-municipal areas (Arnold and Cochrane, 1980, p. 2).

Determinants of internal migration in LDCs are broadly classified as push and pull factors which can be economic or non-economic, and which interact to bring about migration. These factors are incomes (wages); unemployment rates; recreational, educational and community facilities; literacy levels (education), information availability, land pressure, job opportunities, agricultural land availability, education and health services, among others. It is the differences in these variables, or in other words, in economic, social and cultural services between areas, that are the primary motivating force of migration. Apart from these push and pull

factors, there are also intervening factors such as the distance between origin and destination, the costs of moving, the ease of transportation, which also determine internal migration.

In Thailand, intra-regional moves in the 1950s were believed to be determined largely by the availability of agricultural opportunities such as the availability of land. This determinant was found to be important even after the 1950s. Cochrane (1979) using regression analysis, related approximations of five factors: income levels, land availability, urbanisation, information availability and ease of transportation, to the 1965-70 rates of in, out and net migration by changwat. Her results suggested that migration streams flowed towards areas of highest income and available land, that the closer an area is to Bangkok, the greater the rate of outflow, and that increased pressure on land increased the flow of migration. High income was the major factor attracting migrants to an area, but high municipal populations (urbanisation) and low land availability were discouraging factors. More specifically, for the whole kingdom, the North and Northeast, the above five factors explained emigration better than immigration; income levels had a strong positive relationship with immigration in the whole kingdom and in the Central region, and land availability and distance to Bangkok had the strongest relationships with emigration.

Cochrane, together with Arnold in 1980 published another research paper on Thailand's migration (Arnold and Cochrane, 1980). In it, inter-changwat migration for 1965-70 was studied using multivariate regression analysis. Results of this study indicated that economic factors predominated over non-economic attraction of urban areas. In other words, the higher the income per capita, the lower the unemployment, and the lower the proportion of land farmed in destinations relative to origins, the greater the flow of migration between areas. It was also found that although both males and females responded in the same way to per capita income and unemployment, males were more responsive than females to the scarcity or availability of farmland. Migration to and from Bangkok was also found to respond in a similar manner to relative incomes and the availability of farmland as migration to and from other areas.

ESCAP (1982) also studied internal migration in Thailand and concluded that the primary motivating force of migration was the differences in income and access to basic services (such as safe drinking water) between Bangkok and provincial towns or rural areas.

Thus, from the major results of these studies, it can be said that economic factors were the most important motivating forces of internal migration in Thailand and that both push and pull factors were important in determining migration in Thailand.

5.3 Technological Progress

Theory has shown that the rate of technological progress is a determinant of poverty. In other words, low rate of technological progress leads to a low rate of growth in per capita incomes. Was this the case for Thailand? Is there evidence of a low rate of technological progress in Thailand? Did this account for the existence of poverty and differences in the extent of poverty among regions in Thailand?

5.3.1 Definitions, impact and measurement of technological progress

Technical progress as defined by Todaro (1981, p. 551) is the increased application of new scientific knowledge in the form of inventions and innovations with regard to capital, both physical and human.

Technical progress can be classified as:

Neutral technological progress which occurs when higher output levels are achieved with the same quantity and combinations of factor inputs. For example, higher total output levels that result from simple innovations such as those that arise from division of labour.

Labour-saving technological progress when higher levels of output are achieved with the same quantity of labour inputs. For example, tractors and mechanical ploughs.

Capital-saving technological progress when higher levels of output are achieved with the same quantity of capital inputs. Such progress results in more efficient (lower cost) labour-intensive methods of production, for example, hand- or rotary-powered weeders and threshers, foot-operated bellows pumps, back-mounted mechanical sprayers for small-scale agriculture.

Land-saving technological progress when higher levels of output are achieved with the same quantity of land inputs. For example, biological and chemical technology.

Labour-augmenting technological progress occurs when the quality or skills of the labour force are upgraded.

Capital-augmenting technological progress results in the more productive use of existing capital goods as, for example, the substitution of steel

for wooden ploughs in agricultural production.

Land-augmenting technological progress permitted higher output levels to be achieved with essentially the same complementary inputs. For example, high yielding variety of seeds (Todaro, 1981, pp. 90-92).

Technological progress can take the following forms (Hall, 1983, pp. 33-34). It may be embodied, which means that a given quantity of an input becomes more output-productive because of some qualitative change. For example, improved seeds. Embodied technological progress would take the form of improving the quality of seeds. Technological progress can also be disembodied, which means that it raises the productivity of an input without there being any qualitative change in the input itself. Productivity is raised through a change in the method in which inputs are used.

No matter what name is given to technological progress, the effect is that more output is produced with a given number of units of inputs. The impact of technological progress is simply, output increase.

Generally, technological progress takes a form which involves increasing output per unit of land (per hectare, per rai) or per unit of labour (per man, per man hour). In other words, higher technological levels reflected in higher production per unit of land (productivity of land) or per head of population or labour (productivity of labour). Thus, the rate of technical progress can be measured by crude productivity growth rates, such as growth rates of productivity of land and productivity of labour. Productivity differentials among regions can be created by technology differentials and could therefore reflect different rates of technological progress.

5.3.2 Agricultural technologies

Since the majority of Thailand's population and especially the poor in Thailand have agriculture as their livelihood, the increasing use of agricultural technology could have a great impact on the levels of agricultural output and productivity and hence on the incomes of the poor.

Two major sources of technological innovations have been recognized to increase farm yields: mechanical innovations, and biological and chemical innovations.

Mechanical innovations such as tractors, threshers, mills, water pumps, power tillers are known to have assisted productivity of farmlands. Tractors and mechanical threshers are believed to have assisted agricultural productivity especially on farmlands where multiple-cropping is done, where land is extensively cultivated and where labour is scarce. Large tractors are however, believed to be ill-suited in rural areas of developing countries where land parcels are small, capital is scarce, and labour is abundant (Todaro, 1981, p. 276).

Biological (improved seeds) and chemical (fertilizers, pesticides, herbicides, etc.) innovations are land-augmenting, that is, they improve the quality of existing farmland by raising yields per hectare. Only indirectly do they increase output per worker. Improved seeds, increasing use of fertilizers, pesticides and herbicides, etc., represent major scientific advances in modern agriculture. These measures are technologically "scale-neutral", that is, theoretically they can be applied equally effectively on large and small farms. They do not necessarily require large capital inputs or mechanized equipment. They are therefore thought to be particularly well-suited for small farm progress in LDCs. However, it is thought that the "institutions" and "government-policies" that accompany the introduction of new hybrid seeds are not "scale-neutral" and often serve the interests of wealthy landowners only. The reason is that the new hybrid seeds require access to complementary inputs like irrigation, fertilizer, insecticides, credit and agricultural extension service to which the wealthy landowners have disproportionate access. The result is a further widening of the gap between the rich and the poor and increased consolidation of agricultural land in the hands of a few landowners (Todaro, 1981, pp. 277-278). Technological progress (in agricultural technology) in LDCs is therefore thought to have little positive effect on small farmers.

Farmers in Thailand were seen to have adopted agricultural technologies but the level of mechanisation was seen in 1975/76, to vary widely by region and type of machinery (Table 5.16). Farm tractor (>45 H.P.) use was greatest in the Northeast and North, two-wheel walking tractor use was greatest in the Central, four-wheel farm tractor (<45 H.P.) in the Central, and water pumps in the Central. For the whole country, the increase in use during 1977-81 of these four major agricultural machinery implements can be seen in Table 5.17

Table 5.16
Number of Agricultural Labour-Saving Machines,
by Region, 1975/76

Item	Whole Kingdom	Central	North-eastern	Northern	Southern
Farm tractor (>45 H.P.)	13,338	1,967	4,474	3,164	597
Two wheel walking tractor	90,001	58,398	11,220	13,058	7,325
Four wheel farm tractor (<45 H.P.)	16,792	11,124	4,109	1,401	158
Motor roller	9,882	9,577	266	6	33
Sprayer	46,317	19,167	18,261	7,508	1,381
Water wheel engine	56,891	52,875	1,632	2,291	93
Water pump	251,288	137,409	58,097	46,397	9,385
Rice Cleaner	42,342	27,862	9,818	1,589	3,073
Corn threshing machine	5,721	703	3,774	1,076	168
Rice threshing machine	3,955	3,580	177	92	106
Feed mixing machine	374	172	66	58	78
Wind mill	1,937	1,465	300	119	53
Rice mill	24,658	3,170	6,387	11,214	3,887

Source: NSO, Statistical Hand book (1978).

Table 5.17
Number of Some Agricultural Labour-Saving Machines
in 1976/77-1979/80

	1976/77	1977/78	1978/79	1979/80
Farm tractor (>45 H.P.)	17,569	22,826	28,987	33,284
Two wheel walking tractor	113,286	151,504	191,904	230,591
Farm tractor (< 45 H.P.)	16,427	23,942	26,984	31,158
Water pump	277,084	317,328	359,308	473,975

Source: Office of Agricultural Economics, Agricultural Statistics of Thailand (undated).

Prior to 1950, the use of machinery in Thai agriculture was said to be virtually nil. Farmers relied upon human labour, animal-power and a few simple tools. However, in the 1960s, machinery became widely used in Thai agriculture. The most important item of machinery was the tractor. Tractors were mostly used for land tilling. In 1967, about 60% of paddy land in the Central region was tilled by tractor, and even higher rates were reported for upland crops: maize 96%, cotton 64%, sugarcane 72%, and sorghum 75%. Tractors were also used for transportation and shelling (maize) and seemed to be valuable in plowing especially in the plowing season when there is seasonal labour shortage. Tractors also permitted deeper plowing than was feasible with draft animals (Ingram, 1971, p. 273).

Regional variations in the level of farm mechanisation in 1963 have been attributed to a number of factors. Inukai (1970, pp. 455-456) gave reasons especially for the relatively higher level of mechanisation in the Central region as compared to the Northeast. Firstly, irrigation facilities were found to be concentrated in the Central region while the Northeast's share of irrigation was 12 times smaller. Secondly, the average income of a farm household in the Central region was much higher than in the Northeast and it was therefore expected that farmers with higher incomes could afford farm machines more easily than those with lower incomes. Thirdly, the average size of holdings of arable land in the Central was about 23.4 rais, 1.3 times larger, and the proportion of smallholders was less than 15 rais of land was 38%, 0.8 times smaller than in the Northeast. Fourthly, the Central region had more large landlords and more tenants than in the Northeast and therefore, with a positive relation between size of holdings and use of farm machines, it was to be expected that the Central region's level of farm machinery use was much higher than that of the Northeast. Yongkittikul (1981, p. 35) believes that by the early 1970s, mechanisation had done away with animal-power in the Central Plains, and in upland areas, tractors also completely replaced animal-power.

With regard to the use of biological innovations, Ingram (1971, p. 373) believed that before 1970, the IR8 and IR5 rice varieties were scarcely used in Thailand due to certain disadvantages that they possessed. In particular, grain quality and taste were unsatisfactory, and Thailand wanted to preserve the reputation of its rice exports. Consequently, an extensive breeding effort was undertaken with the IRRI to cross IR8 with Thai varieties and achieve higher yields while preserving the desirable qualities of Thai rice. This effort appeared to have had some success and 3 "Thai-style" new

generation varieties were released for planting. (Unfortunately, statistics on HYVs were not available and therefore, no statistical evidence of HYV use can be given.)

Technological change in Thailand also involved the use of chemical innovations, mainly chemical fertilizers. Traditionally, rice farmers relied on the enriching silt deposited in their paddy fields by the annual flood waters, and on animal manure. However, fertilizers have been used since the 1950s but fertilizer imports did not increase until 1965. Fertilizers were used mostly in rapidly expanding cash crops such as maize, kenaf, cassava, fruits and vegetables. In the 1960s, a high import tariff on fertilizers was imposed making cost of fertilizers high relative to the prices that farmers received. This discouraged use of fertilizers and effected farmers' incentives to improve yields. However, fertility use per unit of land has increased from 9.9 kg. per hectare in 1969-71 to 20.1 kg. per hectare in 1978-80 (Table 5.18). Available data on fertilizer use, by crop and by region also shows increasing fertilizer use between 1971 and 1975 (Table 5.19). In 1975, among all regions, fertilizer use was seen to be largest for all crops in the Central region and smallest in the North. The annual growth rate in fertilizer use between 1971 and 1975 was also seen to be fastest for rice and other crops in the Central region, but for field crops, growth rate was fastest in the North. Growth rate of fertilizer use in other crops for the North was however, negative. In the Northeast, fertilizer use in "other" crops seemed to have been stepped up dramatically while there was not much change of fertilizer use in rice production. In the South, fertilizer use in rice and field crops declined while fertilizer use in "other" crops increased dramatically. These changes in fertilizer use implies changes in priority given to crops and intensification of certain crop production in different regions. For the whole country, the proportion of fertilizer used for rice production fell, while that for field and other crops rose.

Another use of chemical innovation, pesticides, can be seen to have increased since 1975 (Table 5.20).

5.3.3 Productivity of land

Technical progress can be measured by productivity growth rate of land, or, in other words, yield per unit of land. An increase in the yield per unit of land may imply that technical progress has augmented the availability of land by raising its quality (i.e. productivity) even though

Table 5.18
Cereal Yields and Fertilizer Use, 1969-81

	All cereal yields (tons per hectare of harvested area)		Fertilizer use (kgs. per hectare of household area)	
	1969-71	1979-81	1969-71	1978-80
Thailand	2.01	1.94	9.9	20.1

Source: World Bank (1984), p. 94, Table 5.7

Table 5.19
Fertilizer Use, by Crop and by Region, 1971 and 1975
('000 metric tons)

	North	Northeast	Central	South	Kingdom	% of Kingdom
<u>Rice</u>						
1971	4.12	80.61	61.60	16.28	180.25	69
1975	6.87	86.81	136.91	12.18	242.77	51
Annual growth (%)	13.6	1.9	22.1	-7.0	7.7	
<u>Field crops*</u>						
1971	7.24	7.09	29.57	2.08	51.33	20
1975	27.71	15.61	73.51	2.06	118.89	25
Annual growth (%)	39.9	21.8	25.6	-0.2	23.4	
<u>Other**</u>						
1971	2.84	0.89	10.03	16.28	29.04	11
1975	1.94	3.57	56.88	53.97	116.36	24
Annual growth (%)	-9.1	41.5	54.3	34.9	41.5	
<u>Total</u>						
1971	14.20	88.59	123.20	34.64	260.62	100
1975	36.52	105.99	267.30	68.21	278.02	100
Annual growth (%)	26.6	4.6	21.4	18.5	16.4	
% of Kingdom	5.4	34.0	47.3	13.3	100.0	

* Maize, sorghum, sugarcane, cassava, kenaf, cotton, tobacco, mung beans, soy beans, peanuts, watermelon, pineapple, yam, sweet potato, potato.

** Coconut, rubber, oil palm, fruit trees, flowering plants.

Source: Office of Agricultural Economics, Agricultural Statistics of Thailand (undated).

Table 5.20
Use of Pesticides in Agriculture, 1973-1981
('000 tons)

	1973	1974	1975	1976	1977	1978	1979	1980	1981
Pesticides	10.0	9.0	11.0	12.4	16.6	23.0	23.0	24.0	26.0

Source: Office of Agricultural Economics, Agricultural Statistics of Thailand, Crop year 1981/82.

its quality may have remained roughly the same. Table 5.18 shows that during 1969-81, the average of all cereal yields in Thailand fell from 2.01 tons per hectare in 1969-71 to 1.94 tons per hectare in 1979-81. The difference though small (0.05 tons per hectare) nevertheless implies that on the whole productivity of cereals was more or less stagnant.

Productivity of land by regions, for major crops for the years 1968-75 can be seen in Table 5.21. It is apparent that there was productivity differentials among regions. The Northeast seemed to have less than average productivity (low productivity) for paddy, maize and sugarcane, and not much improvement in yields over the 1968-75 period. As for the Central region, yields for these crops were higher than average. But, except for sugarcane, there was not much improvement in yields. For the North, paddy yields were higher than average even though there was not much improvement in yields after 1969. Maize yields also showed no improvement. However, kenaf yields increased substantially after 1975, so also did sugarcane yields and cassava yields after 1972. For the South, paddy yields and maize yields were not much different from the average and also showed no improvement. Cassava yields and sugarcane yields were below average and also showed no improvement over the 1968-75 period.

Table 5.22 shows annual growth rates of yields for major crops during 1959-75. Growth rates of paddy, kenaf and cassava yields declined during this period, but the decline slowed down for cassava yields in the latter period. On the other hand, growth rates of maize, rubber and sugarcane rose during 1959-75, the growth rate of sugarcane yield being quite substantial. Since the rate of growth of area under maize production did not change, the rise in rate of growth of maize yields could have been the result of technical advance. This is true for rubber also. Yongkittikul (1981, p. 39) believes that the increase in rubber yields was the result of high-yielding varieties.

In Thailand, agricultural production in the 1960s was believed to rise mainly due to expansion in cultivated land (i.e. extensive cultivation). According to Yongkittikul (1981, p. 42), in the 1960s, cultivated land expanded at an average rate of 4% per annum. It was expected however, that available new land would have been exhausted by the early 1980s which meant that further improvements in productivity must come through the intensity of land use. The World Bank (1980a, pp. 71-72) reported that there was much potential in Thailand for increasing the intensity of land use. Intensity

Table 5.21
Yields of Major Crops, 1968-1975, by Region
 (kg/rai)

Crops	Region	1968	1969	1970	1971	1972	1973	1974	1975
Paddy	Central	252	299	285	296	288	335	304	278
	North	267	383	408	387	284	345	371	354
	Northeast	179	226	240	253	230	208	183	213
	South	286	263	256	268	264	262	230	284
	Whole Kingdom	299	283	290	292	262	276	260	265
Maize	Central	302	380	330	334	232	339	270	279
	North	283	279	279	292	170	245	257	298
	Northeast	200	245	258	265	145	252	274	279
	South	303	244	268	288	287	281	299	285
	Whole Kingdom	280	303	289	300	182	275	266	288
Kenaf	Central	285	258	320	307	222	189	207	219
	North	150	214	238	182	188	229	211	286
	Northeast	205	211	211	196	206	188	185	192
	South	-	-	-	-	-	-	-	-
	Whole Kingdom	200	211	211	197	206	189	185	192
Cassava	Central	2,583	2,464	2,499	3,118	2,298	2,510	2,537	2,509
	North	2,227	1,917	2,000	2,182	2,179	2,613	2,850	2,932
	Northeast	1,934	2,438	2,693	2,300	2,479	2,227	2,308	2,517
	South	1,650	1,664	1,443	1,393	1,802	1,874	1,945	1,608
	Whole Kingdom	2,449	2,374	2,409	2,796	2,307	2,402	2,437	2,500
Sugarcane	Central	5,838	6,371	6,922	6,578	7,614	8,361	8,215	7,835
	North	4,531	4,000	4,188	3,897	4,416	6,165	7,745	7,280
	Northeast	3,586	3,985	4,285	3,661	3,209	3,114	3,950	4,969
	South	2,451	1,785	1,598	2,073	1,714	2,415	2,042	2,012
	Whole Kingdom	5,169	5,563	6,129	5,719	6,647	7,547	7,605	7,430

Note: Regional yields for rubber not available.

Source: World Bank, 1980(a), pp. 228-232.

of land use was thought to be especially low in the North and Northeast where the area under cultivation accounted for 67% and 55% of total area of holdings, respectively. In the South it accounted for 76%.

5.3.4 Productivity of labour

Technological progress can also take the form which involves increasing labour productivity (output per worker). The World Bank (1984, p. 92) believes that labour productivity in most developing countries have been maintained, since diminishing returns to labour have been forestalled by intensification of land use such as better farming methods, use of fertilizer, investments in irrigation and drainage, and mechanisation.

Table 5.23 shows GDP per worker in Thailand for agriculture, for the years 1972-81. GDP per worker in agriculture (or productivity per worker) is seen to have been increasing since the early 1970s but the rate of increase has fluctuated widely, with high positive growth rates in 1973, 1975 and 1978 and negative growth rates in 1977 and 1979.

Table 5.24 shows real per capita income growth for regions (or growth of productivity per person) for the period 1968/69 to 1975/76. Growth of productivity per person in urban areas were seen to have declined in all regions except for the Central region, while growth of productivity in rural areas were seen to have improved in all regions except for the North. This means that productivity in rural areas grew faster than in urban areas. However, it should be noted that the difference in growth rates was not much.

5.3.5 Irrigation

Productivity improvements can be the result of factors other than technological progress, such as, improvement of infrastructure (irrigation, roads, etc.); increase in human investment or, in other words, increase in the quality of the labour force as a result of better education and health; or, even migration.

Productivity improvements in the Central region could have included the effect of infrastructure development. Researchers have noted the importance of infrastructure development to agriculture development in the Central region. The Thai government was known to have given priority to priority to infrastructure development during the First National Plan and Second Plan periods and the expansion of road networks and irrigation systems were believed to have had a considerable impact on the agricultural

Table 5.22
Growth Rates of Major Crops, 1959-75

	Annual Growth Rate (%)					
	Production		Area		Yield	
	1959-70	1970-75	1959-70	1970-75	1959-70	1970-75
Paddy	2.9	0.2	2.1	2.3	0.7	-2.1
Maize	12.9	13.4	13.3	13.3	-0.4	0.1
Cassava	6.4	37.9	8.1	38.6	-1.6	-0.5
Kenaf	16.8	-1.4	16.0	0.8	0.6	-2.0
Sugarcane	1.5	34.3	0.1	27.0	0.5	5.7
Rubber	5.0	4.8	4.4	3.7	0.6	1.1

Source: World Bank, 1980(a).

Table 5.23
Gross Domestic Produce per Worker in Agriculture, 1972-81
 (Axed Price based on 1972)

Year	GDP per worker in Agriculture (baht/year)	Rate of Increase as compared with previous year
1972	3,424	+2.06
1973	3,800	+10.98
1974	3,810	+0.26
1975	5,378	+14.91
1976	4,611	+5.32
1977	4,554	-1.24
1978	5,010	+10.01
1979	4,910	-5.30
1980	4,988	+1.59
1981	5,213	+4.51

Source: Office of Agricultural Economics, Agricultural Statistics of Thailand (undated).

Table 5.24
Real Per Capita Income Growth (percentage per year)
1968/69-1975/76

	Northeast	North	South	Central	Bangkok	Whole Kingdom
Urban	-1.3	-3.5	-0.1	+0.4	-2.9	0.7
Rural	2.1	-0.4	1.5	0.1		1.0

Source: ESCAP, 1982, p. 73, Table 38.

development of Thailand. However, the government's investment in infrastructure was mainly directed to the Bangkok-centred region, that is, the Central region (Yongkittikul, 1981, pp. 33, 36). It may be that the other regions did not have the river system and topography well-suited to large-scale irrigation projects as was the case for the Northeast. Areas in the Northeast were supplied water through "tank" irrigation projects, which were small basins which catch water in the rainy season and stores it for later use. But these were said to serve only a small fraction of the region. Irrigation projects were small also in the North, and as for the South, irrigation was said to have scarcely existed (Ingram, 1971, p. 276).

The priority that was given to the Central region in infrastructure development is evidenced in Table 5.25. In 1968, 83% of total irrigable area in the Central region was already irrigated, while in the North, Northeast and South the proportion was 67%, 63% and 54% respectively. This meant that in 1968, there was still "room" for irrigation in these regions. That irrigation has been increasingly provided for these regions is evidenced in Table 5.26. Irrigated area increased in all regions between 1977 and 1981, but while the Central's share of total irrigated area fell (though still large), the share of the North, Northeast and South rose during 1977-81

5.4 Entitlements

Sen's "entitlement approach" identifies a person's entitlements as a determinant of poverty. A person's entitlements depends on his ownership: the land, the labour, the capital, that he owns (ownership endowment), as well as on the terms at which he can exchange, through production or trade, what he owns, for other commodities (exchange entitlements).

This section will therefore consist of two parts, the first part being an assessment of land ownership and tenancy in Thailand (representing entitlements of land), and the second part being an examination of the distribution of income among different income classes and among different regions in Thailand (which amounts to the distribution of acknowledged claims over resources, what Sen describes as "exchange entitlements".) Land was chosen for the study of entitlements since it constitutes the main economic base for the majority of the poor in Thailand.

Table 5.25
Total Land Area, Cultivated Area, Total Irrigable Area
 and Total Irrigated Area by Region, 1968

	Central	North- east	North	South	Whole Kingdom
Total Area (sq.km.)	103,579	170,226	170,006	70,189	514,000
Total Cultivated Area* (million ha.)	4.17	7.60	3.80	1.80	17.37
Total Irrigable Area (million ha.)	1.98	0.38	0.57	0.27	3.20
Total Irrigated Area (million ha.)	1.65	0.24	0.38	0.15	2.42
Irrigated Area as % of total irrigable area	83	63	67	54	75
Cultivated Area as % of total area	40	45	22	26	34

* 1968 figure, converted to hectares using 6.25 rai = 1 hectare.

Source: Prantilla, 1981, p. 112, Table 6-4.

Table 5.26
Accumulated Irrigated Area, by region, 1977 and 1981

Region	1977		1981	
	Irrigated area (^{'000} hectares)	% of total	Irrigated area (^{'000} hectares)	% of total
Whole Kingdom	2470	100.0	3241	100.0
Central	1648	66.7	1852	57.1
Northeast	223	9.0	408	12.6
North	462	18.7	708	21.9
South	136	5.5	273	8.4

Note: Irrigated area converted to hectares using 6.25 rai = 1 hectare.

Source: Office of Agricultural Economics, Agricultural Statistics of Thailand, crop year 1981/82.

5.4.1 Land ownership and tenancy

Whether poverty existed in Thailand due to unequal distribution of land, increasing tenancy ratios, increasing landlessness, etc.; if so, what factors were thought to be responsible for these conditions; and whether the tenurial system discriminates against the poor, are important questions that need to be answered.

System of land tenure

Thailand's land tenure system bears the characteristics of a mixture of traditional practices and modern laws.

Thailand has traditionally been a nation of smallholding owner-farmers. Until recently, new land was available for the expansion of cultivation as population grew and new families were formed. Unclaimed land was the property of the state, but custom and law permitted individuals to occupy, clear and cultivate such land. Laws also prevented the growth of large estates. Consequently, tenancy had not been a serious problem. However, population has grown rapidly and extension of cultivation has progressed so much so that by the late 1970s, most of the good land had been claimed and tenancy problems have worsened.

"The 1954 Land Code of Thailand" provided for three classes of landholders, or in other words, recognized three types of landholding: (1) "Bai chong" or "reserve license" authorized the holder to occupy unclaimed land, usually for 3 years; (2) "Nor sor" or "reserve license" when he has bought at least 75% of the land under cultivation he then has a permanent right to the land, but transfer is cumbersome; (3) "Chanod tidin" or "title deed" is evidence of full ownership and carries full right to transfer (Ingram, 1971, p. 266).

Thai farmers/peasants had however, little or no knowledge about modern laws and still followed traditional practices. For them, land occupation and land ownership have customarily been one and the same. Therefore, it was estimated that only about 12.2% of farmlands were under full title deeds, most of the land under this category being located in the Central region and 18.3% of farmlands were under exploitation testimonials (Kamolayabutra, 1978, pp. 28-29). Although both of these certificates could be used as mortgage collateral, only the title deed was fully acceptable to lenders. As for farmers holding the remaining two-thirds of the area in farms, they had no legal claims to the land they occupied and

therefore, these farmers could not use their principal asset, land, as security for a loan. Moreover, since the government followed a policy of tacit approval of illegal cultivation by farmers, the result was the establishment of a dual system of rights to state-owned land, with the government continuing to retain legal rights of ownership while the "squatters" possessed practical rights with respect to occupancy and cultivation. Therefore, conflicts arose between government and farmer when for example, plans for a dam construction or rural building were made and farmers were issued eviction orders. Farmers with no legal claims faced insecurity in this respect. All these show the inefficiency of land administration in Thailand.

Tenancy and pattern of land ownership

Tenancy in the earlier decades was not regarded as a serious problem although rates of tenancy had existed in certain localities. It was only in the 1960s that tenancy has increased substantially. Statistical evidence indicated a declining trend for 1937-63, but a sharp rise since 1963. The percentage of pure tenants (farm rented land entirely) declined from 26.7 in 1937 to 9.9 in 1963, and then rose to 22.5 in 1967 (Ingram, 1971, p. 267). The fact that the rate of full tenancy has increased since the 1960s, was also accepted by Krongkaew (1979, p. 83).

Table 5.27 shows the proportion of rented land to total land holdings for 1973 and 1975. This table also shows the pattern of land distribution in Thailand and its regions. It can be seen that the percentage of total rented area to total landholdings in 1973 and 1975 was about 12.3% and 15.5% respectively. Although these proportions are not large, they belie the uneven distribution of tenancy among the regions. The Northeast and South were seen to have relatively limited tenancy holdings, in contrast to the North and particularly, the Central region. It can also be seen that during 1973 and 1975, the proportion of rented area had risen in all regions.

Table 5.28 also shows the high rate of tenant farming in the Central region and in the North. The average ratio of tenant households in the Central region and in the North was seen to be high, at 41.3% and 26.7% respectively. This ratio for 7 provinces in the Central region was even higher as seen in Table 5.29. The ratios were also not only high but increasing too.

Table 5.27

Proportion of Rented Land Areas to Total Land Holdings, 1973 and 1975

Region	1973			1975		
	Total land holdings (million rai)	Rented land (million rai)	Rented to total area (%)	Total land holdings (million rai)	Rented land (million rai)	Rented to total area (%)
North	23.2	3.7	15.5	23.9	4.4	18.4
Central	27.3	8.0	29.3	27.5	9.1	33.0
Northeast	48.8	1.6	3.3	47.5	3.2	6.8
South	13.7	0.6	4.4	13.2	0.7	5.5
Whole Kingdom	112.8	13.8	12.3	112.2	17.4	15.5

Source: Krongkaen, 1979, p. 83, Table 18 (for 1973),
Office of Agricultural Economics, Agricultural Statistics of Thailand, (undated), (for 1975).

Table 5.28
Percentage of Tenant Households by Region

Region	Total farm households ('000)	Tenant households ('000)	Percentage of tenant households
Central	853.7	352.6	41.3
North	1,127.9	301.3	26.7
Northeast	1,820.3	158.0	8.7
South	577.7	101.0	17.5
Whole Kingdom	4,379.5	912.9	20.8

Source: Suehiro, 1981, p. 318, Table 1.

Table 5.29
Tenant Farming in Provinces in Central Region
 (%)

Province	1968/69	1973/74
Pathum Thani	82.62	83.92
Ayutthaya	62.05	76.49
Samut Prakan	68.22	71.54
Nakorn Nayok	46.96	67.70
Chachoengsao	42.70	63.64
Sara Buri	42.00	53.60
Ang Thong	39.73	49.92

Source: Suehiro, 1981, p. 318, Table 2.

In some provinces located in the Central plains and areas close to Bangkok, there were serious instances of land concentration by absentee landlords. Suehiro (1981, p. 319) noted that a survey report in 1979 gave evidence of the existence of large-scale landowners (each owned over 100 rais), who were also absentee landlords, in Ayutthaya province of Central region as well as in the rice-growing areas around Bangkok. These landlords resided in Bangkok. The existence of absentee landlords is thus, a remarkable characteristic of the Central delta region.

As for the landlords in the North, which also had a high ratio of tenant farming, they were, for the most part, not absentee, but lived in the same village and same province as their tenants, the core of whom were landowners originally.

Another problem related to tenancy was the problem of land fragmentation. There was belief that the pressure of population on land and inheritance customs (which breaks down farm land among children), led to increasing land fragmentation in Thailand (Kamolyabutra, 1978, pp. 38-39). Such fragmentation is detrimental to agricultural productivity, and therefore, if land productivity stagnates and agricultural households continue to increase, the natural outcome would be the increase in poor landless tenant farmers.

That there was the problem of increasing landlessness is also implied by the increase in the average size of land holdings. The rapid loss of land ownership by many small farmers and the extensive clearing of forest land for farming during the late 1960s and early 1970s, probably caused the average size of farm holdings to increase as seen in Table 5.30. This table also shows that the scale of landholdings in the North was smallest and smaller than the national average, and in the Central was largest. For the Northeast, the average size of landholding in 1975 was higher than the average for the country, but since the soil in the Northeast is thin and of poor quality, the farmer in the Northeast cannot be said to be in a better position than the farmer in the North or the South who had smaller holdings.

Thai farmers were also found to be faced with the problem of indebtedness and forfeiture of ownership of their land. Table 5.31 shows that in 1971/72, 27% of all agricultural households were burdened with debt, the national average for debt per household being 3830 baht. Among the regions, the Central had the highest ratio with 48% of all agricultural households

Table 5.30
Average Size of Farm Holding by Region, 1963 and 1975
 (rai)

Region	1963	1975
Whole Kingdom	21.7	27.2
North	16.1	22.7
Northeast	21.6	28.3
Central	26.9	33.3
South	21.7	23.5

Source: Kamolyabutra, 1978, p. 39, Table III.9 (for 1963),
 Office of Agricultural Economics, Agricultural
 Statistics in Thailand (undated), (for 1975).

Table 5.31
Indebtedness of Farm Households by Region, 1971-72

Region	Ratio of indebted households (%)	Average indebtedness per household (baht)
North	12.9	3,962
Northeast	27.3	1,785
Central	47.9	8,457
Eastern	29.2	5,638
South	13.3	3,901
National average	27.4	3,830

Note: The figures apply to land held under title deed.

Source: Seuhiro, 1981, p. 324, Table 7.

in debt, the average debt being 8457 baht. The Northeast region, had 27% of all agricultural households in debt, but average debt of 1,785 baht was much lower than the national average and lowest among all regions. Interest rates on loans in the Central region were said to be 20% or even more, according to Lin and Esposito (1976, p. 427).

Apart from these problems, the tenancy system offered little or no security to the majority of tenants in Thailand. It was reported in a 1965 Government publication that 65% of full-time tenants and 73% of part-tenant/part-owners, had no contracts. Also, among the tenants who had contracts, more than 85% had one-year agreements and were not even certain of their renewal (Lin and Esposito, 1976, p. 427).

Land rents were also high for tenants. Surveys showed that two-thirds of tenants paid their rents in fixed quantities of rice, while others paid either a fixed amount of cash, or a share of the yield (Kamolayabutra, 1978, p. 52). This shows that landlords preferred to impose fixed rent in kind. However, the fixed rent in kind or in cash was disadvantageous for the tenant since the whole burden of crop failure fell on the tenants. On the other hand, share cropping was advantageous for the tenant since the risk of crop failure or fluctuating yields was shared by the landlord. In general, rents differed considerably by province but normally the part-tenants had to pay higher rents than the pure tenants. The full-tenants paid rent in terms of crops ranging from 22% to 52%, and part-tenants paid rent which ranged from 25% to 55% of total crops.

In sum, the land tenure system was found to discriminate against the poor. Two-thirds of the farmers had no legal claim to the land and therefore had no security. Tenancy ratios were found to be high and rising especially in the Central and North and tenancy problems were mostly felt in the Central. Due to insecure tenure, farmers were not motivated to invest in long term farm improvements which probably affected productivity.

5.4.2 The distribution of income

The distribution of income in Thailand need to be examined to see how income is actually distributed among regions and income groups, if the distribution system had discriminated against those in need (i.e. the low income groups) and whether there has been a worsening or an improvement in relative income inequalities over the years.

The two previous chapters have shown that economic development in Thailand during the 1960s and 1970s succeeded in raising the incomes of the vast majority of the population. Yet, evidence presented in Tables 5.32 and 5.33 suggest that in Thailand, income inequality was not only high, but had worsened over the years.

Table 5.32 shows the distribution of household income for the years 1963, 1969 and 1972. It can be seen that in Thailand, income inequality was not only high but had worsened over the years from 1963 to 1972. The lowest 20% of households were seen to receive 2.9%, 3.4% and 2.4% of total money income in 1963, 1969 and 1972 respectively, while the highest 20% received income shares of 59.5%, 60.9% and 64.4% respectively. The bulk of households in the middle 60% were seen not only to have relatively smaller income shares but their income shares were seen to have declined continuously. Also, within the top 20% which had gained absolutely and relatively, the top 1% apparently gained the most. This pattern of income distribution clearly shows a worsening of income inequality.

Table 5.33 shows regional income distribution by household and income groups for 1973. It can be seen that households in the Central region and in Bangkok are relatively well-off compared to households in the other 3 regions. In 1973, while only 0.7% of Bangkok's households received an income of under 6,000 baht, the proportion of households receiving the same amount of income ranged from 41.7% in the Northeast to 15.2% in the South. On the other extreme, about 44.5% of total households in Bangkok received an income of more than 30,000 baht for the same year compared to only 4.4% of total number of households in the North, 9.3% in the Northeast and 10.5% in the South. These differentials in regional income distribution were not apparent in the national average income share figures for the lowest and highest income groups.

Table 3.12 in Chapter 3 also shows regional income distribution for the years 1960, 1970 and 1979. The fact that Bangkok and the Central region had relatively higher income shares than the other 3 regions, could also be seen in this table. This table also shows that income inequality did not improve during the 1960s and 1970s.

In sum, it is apparent that in Thailand, there was high inequality in income distribution among income groups, there were differentials in regional income distribution, with Bangkok having a large proportion of households in the highest income group, and Bangkok and the Central region

Table 5.32
Distribution of Money Income of Thai Households
by Quintile Group, 1963, 1969 and 1972
 (percentage)

Quintile	1963	1969	1972
Lowest 20%	2.9	3.4	2.4
Second 20%	6.2	6.1	5.1
Third 20%	10.5	10.4	9.7
Fourth 20%	20.9	19.2	18.4
Top 20%	59.5	60.9	64.4
Within Top 20%			
Top 10%	42.2	43.9	47.5
Top 5%	28.4	31.1	35.5
Top 1%	9.6	10.5	15.0

Source: Krongkaew, 1979, p. 67, Table 2.

Table 5.33
Regional Income Distribution by Households
and Income Groups, 1973

Region	Income class			Total
	Under 6,000 baht	6,000-29,999 baht	Over 30,000 baht	
North	25.3	70.1	4.4	100
Northeast	41.1	49.6	9.3	100
South	15.2	74.3	10.5	100
Central	4.1	78.5	17.4	100
Bangkok	0.7	54.8	44.5	100
Whole Kingdom	22.2	64.6	13.2	100

Source: NESDB, The Fourth Five Year Plan (1976-1981), p. 144.

having the highest regional income shares, while the Northeast had a large proportion of households in the lowest income group and also a small proportion in regional income share, and that income inequality had worsened for all regions and for the country. All of these facts lead to the conclusion that the income distribution system in Thailand discriminated against the poor, but especially the poor in the Northeast and North.

5.5 Analysis of Poverty in Thailand: An Integrated Approach

Theory says that people are trapped in a low level of per capita income when there is rapid rate of population growth, given the level of technical progress; or, when there is a low rate of technical progress, given the rate of population growth; or, when the rate of population growth exceeds the rate of technical progress. For an agricultural economy, these two factors alone are not sufficient to explain the existence of a low level of per capita income or of poverty. Land distribution must also be considered as an important determinant of poverty since land constitutes the principal asset that farmers hold. Moreover, theory also says that impoverishment can be explained by the "failure of entitlements", which means lower endowment vector and/or less favourable exchange entitlement. This can mean, for our purpose, more inequality in land distribution and in income distribution.

Thus, in sum, impoverishment is brought about by the rapid rate of population growth, the low rate of technical progress, and more inequality in land and income distributions. These three together explain mass poverty in LDCs.

Theory says that rapid rate of population growth slows per capita income growth and therefore worsens the situation of poorer groups. This is because, first of all, rapid rate of population growth results in a high dependency ratio, i.e. a high ratio of dependents to workers. High dependency burdens may reduce household savings since more is used for current consumption, and therefore, the situation of the poor is worsened. Rapid population growth may also increase the size of the school-age and working-age populations, with resultant pressures on school systems and labour markets. In general, more children of school age means more educational facilities, more educational expenditures, and in other words, smaller educational inputs per enrolled child. For the majority of the growing labour force who may have increasingly few complementary assets

(capital, land) to work with in relation to their growing numbers, the capital-labour and land-labour ratios tend to worsen and thus productivity and incomes can stagnate or fall. New entrants to the labour market who are young and inexperienced can also be openly unemployed. In LDCs many are underemployed, i.e. many are in low-productivity, low-wage jobs in agriculture or urban-informal sectors. Internal migration by members of the working-age group can also lead to intra-rural and rural-urban inequality, and worsen rural poverty, since migrants being young, more-educated and more-motivated, brings benefits to the urban economy, while the rural area he leaves behind loses.

Worsening capital-labour and land-labour ratios are reflected in worsening incomes for especially those on the margin, those who rely on wage-employment, and those with very little or no land. Due to rising population growth, not only do the incomes of landless (and near landless) labourers tend to worsen but their numbers also tend to increase. This can also be partly due to "decumulation" of assets (Stewart, 1978) which occurs when smallholders sell their assets to maintain consumption at a survival level, following land fragmentation and falling incomes that accompany the worsening in the land-labour ratio. Decumulation also tends to be cumulative, the initial decumulation or sale of assets, while providing temporary relief, also leads ultimately to reduced incomes and therefore the need to sell more to survive. There is also a parallel effect on labour productivity. Low incomes result in low nutrition, inability to afford the education, training or investment in health essential to raise incomes, and therefore incomes continue to be low in the next period.

Therefore, in rural areas, the limited supply of land against growing population and stagnant productivity, and the tendency for cumulative decumulation, leads to the growing impoverishment of the rural labourers.

Worsening of real per capita incomes especially in rural areas, can however be offset by technological progress, or in other words, by raising agricultural yields or output per worker. However, if the rate of technological progress in agriculture is less than the rate of population growth, or if productivity is stagnant, then, per capita income will continue to stagnate. In the face of rising labour force growth, labour-saving technological progress can worsen conditions of employment by displacing labour in rural areas. Technological progress in the form of HYV seeds may also serve the vested interests of wealthy landowners and cause the gap

between rich and poor to widen. Since the new HYV seeds require complementary inputs like irrigation, fertilizers, insecticides, credit and agricultural extension services to which large landowners have disproportionate access and therefore have a competitive advantage over small holders, small holders will eventually be driven out of the market. The inevitable result is a further impoverishment of the masses of rural peasants, a further widening of the gap between rich and poor, and increased concentration of land in the hands of a few, i.e. more inequality in land distribution.

Having seen the inter-relationships of the three factors that determine poverty, the question now should be whether population growth, technological progress and land distribution explain poverty in Thailand.

In Thailand, real increase in per capita income was, during 1962/63-1975/76, an average of 2.7% per year. This was approximately the same rate as population growth. Rapid population growth can therefore be said to have slowed per capita income growth. Population rate of growth in Thailand during the 1960s and 1970s was indeed high but was declining. This was the result of the fall in CDR being greater than the fall in CBR. The undesirable consequence of high fertility was a young population (45% of total population under age 15) and a high working-age group (51%) in the 1960s. The child-dependency ratio was therefore high (but declining) which meant a greater burden on the working-age group. The proportion of school-age population (age 5-14) did not fall but the proportion of pre-tertiary and tertiary population (age 15-19) increased. This meant additional educational facilities and expenditures. On the other hand, the increasing proportion of working-age population meant extra pressure on the labour market and unemployment problems.

Evidence on the rate of technical progress suggested that, on the whole, there was a low rate of technical progress in Thailand during the 1960s and early 1970s. Crude indicators of technical progress, the output per unit of land figures, or yield per rai, show that during 1959-75, there was no substantial improvement in yields of major crops except for sugarcane. On the other hand, output per worker or GDP per worker in agriculture during 1972-76, showed an increasing but fluctuating trend. Evidence also suggested that the rate of adoption of agricultural technology was low. For instance, use of machinery in agriculture before 1975 was small and use of HYV of rice was not widespread. (But HYV of rubber was said to have

increased rubber yields.) Fertilizer use, however, doubled during 1969-71 and 1978-80, but most of the increase was for crops other than paddy.

For the country as a whole, income inequality worsened during 1963-1972. Landholdings, were officially classified into three categories, two of which offered security to the holders. However, it was estimated that the majority, two-thirds of the landholders, were in the category that offered no security, i.e. holders had no legal claims to the land they held. This was probably due to the ignorance of the peasants with regard to the laws and also the inefficiency of land administration. Tenancy previously regarded as not so serious a problem was also seen to have increased. The tenancy system also offered little or no security to the tenants since the majority of the tenants had no contracts, while the majority of those who had contracts had them for a period of one year only. Land rents were also seen to be increasing and indebtedness of peasants too. There was also land fragmentation due to inheritance customs. All these problems resulted in increasing landlessness and concentration of land in the hands of large landowners especially in the Central and Northern regions.

These evidences of rapid population growth rate, low rate of technical progress, and increased inequality in land distribution in Thailand, conform to theory and it is believed that together, they interacted to condemn 31% of the population to impoverishment in 1975.

It should be noted that Thailand did have some success in eradicating poverty but that although poverty incidence declined (from 39% in 1968/69 to 31% in 1975/76), it was believed that the absolute number of poor people remained more or less the same. In any case, fertility reduction seemed to have been the major factor bringing about this decline in poverty incidence. Among the many determinants of fertility (Section 5.2.3), higher levels of education of women and more female employment opportunities, and family planning programmes and increased contraceptive use was thought to have contributed most to fertility decline.

This picture of poverty in Thailand is not sufficient for purposes of policy prescriptions. It is necessary to go as far into the problem of poverty as possible. It was also seen in Chapter 4 that poverty was distributed unequally among the regions in Thailand. The Northeast was seen to be the poorest while the Central and Bangkok were the least poor. The North was the second poorest while the South was the third poorest region. It is therefore important to find out why there were variations in the incidences of poverty among regions in Thailand.

The Northeast

Why was the Northeast the poorest region? The Northeast was the largest region but with a difficult physical environment. It had the largest population (12 million in 1970), 96% of whom lived in rural areas. During 1960-79, it had the lowest regional per capita income, however, the real income in per capita income of 3.5% per annum was highest among regions. This rate of increase was greater than the rate of population growth, 2.9% during 1960-70 and 2.5% during 1970-80, yet, in 1975 the incidence of poverty was 44%, the highest incidence among the regions, and an estimated 7 million people were living in poverty in the Northeast.

There is no doubt that the high rate of population growth put a drag on income per capita growth. A high rate of natural increase brought about by a greater fall in CDR and a much less fall in CBR was the reason for the high rate of population growth. In other words, there was high fertility (CBR was 43 per 1000) in the Northeast. This was because contraceptive use was still small while desired family size goals were higher than in other regions. High fertility resulted in unfavourable consequences: a high proportion (43.4%) of child population, which was the highest in the regions, and a high proportion (52.3%) of working-age population, which was the lowest among the regions. As such, child dependency ratio was high (83%) implying a heavy burden on the working-age population. The Northeast also lost some outmigrants who were primarily of working age, and therefore, the problems implied by population growth in the Northeast would be more serious than in other regions.

Evidence on the rate of technical progress suggests that it was very low in the Northeast. Productivity of land, i.e. yields of major crops for the years 1968-75 show that while yields for paddy, maize, sugarcane, was less than average, there was also not much improvement in yields for the major crops. Fertilizer use was found to have been stepped up in other crops (coconuts, rubber, palm oil, fruit trees, flowering plants) but not much in paddy production. Although large tractors were mostly used in the Northeast, the level of farm machinery used was, on the whole, very small compared to the Central. Irrigation was mainly in the form of "tank" irrigation projects which served only a small fraction of the region. In 1968, there was still room for expanding irrigation since only 63% of total irrigable area was irrigated.

The income distribution system was found to discriminate against the poor in the Northeast. In 1973, 41.1% of households in the Northeast were in the lowest-income group while there was only 0.7% households in that category in Bangkok. In terms of tenancy holdings, however, discrimination was not evident. There were only limited tenancy holdings, 3.3% in 1973 and 6.8% in 1975, and the ratio of tenant households was also small (8.7%). However, 27% of agricultural households were in debt although the average debt was lowest among regions. There may have been increasing landlessness since average size of holdings increased from 21.6 rai to 28.3 rai between 1963 and 1975. The average size of holding was larger than the national average, but since soils are thin and of poor quality in the Northeast, the farmer in the Northeast cannot be said to have a relatively favourable land-man ratio.

Therefore, rapid population growth rate, low rate of technological progress and a very unequal income distribution system all seemed to have worked together to condemn a large proportion of the people in the Northeast to poverty.

The North

The North, which was almost as large as the Northeast in area and was least dense, was the second poorest region. It had the second lowest regional per capita income, but the real increase in per capita income of 2.6% per annum was the same as population growth rate during 1960-70. Population growth rate in the 1970-80 period however, declined to 1.8%. This dramatic fall in population growth rate was mainly due to the fall in CBR which was the largest decline among the regions, TFR and GRR also showed marked declines. Fertility decline was facilitated by higher literacy and higher contraceptive use. On the other hand, the North had the highest mortality rate among regions. Another point to note was the rise in urban population rate of growth while rural population rate of growth fell dramatically in the 1970-80 period. This may partly be caused by net immigration in urban areas. The consequences of declining fertility was a lower than average ratio of child population. Working-age population was, however, higher than average. As such, the child dependency ratio was also less than average. The implication of this was that the North would have to cope more with problems of unemployment, low productivity, etc. associated with the high labour force growth, given that resources do not expand at the same rate as labour force.

The rate of technological progress in terms of productivity per unit of land, was in general, seen to have been higher in the North than in the Northeast and South. Paddy yields were relatively high but there was not much improvement in yields over the 1968-75 period. Maize yields also showed no improvement, but kenaf yields (after 1975) and sugarcane and cassava yields (after 1972), showed substantial improvements. However, on the whole, the intensity of land use was thought to be low in the North as it was in the Northeast. Improvements in the yields of field crops could be the result of increasing use of fertilizers. Fertilizer use was also stepped up in rice production. But, on the whole, fertilizer use in the North was just a small percentage (5.4%) of the total. Adoption of mechanisation was also not as much as in the Central and Northeast. Irrigation projects before 1970, were also comparatively small. Evidence, however, shows increased irrigation after 1977.

In 1973, regional income distribution showed that 25.3% of households was in the lowest-income group while 4.4% were in the highest-income group. The proportion of households in the lowest-income group was not as big as in the Northeast. However, tenancy problems in the North seemed to be more than in the Northeast. In 1973, tenancy holdings constituted 15.5% of total holdings and this increased to 18.4% in 1975. The ratio of tenant households (26.7%) was also relatively high. The North's indebtedness ratio was however, smallest (12.9%) in all regions, but the average debt was much higher than in the Northeast. Average size of landholdings was smallest for the country. Landlords were not absentee as in the Central region.

In sum, less rapid rate of population growth, a higher rate of technological progress and a better income distribution than the Northeast all seemed to have worked in placing the North as the second poorest region in Thailand with 33% of population living in poverty in 1975.

The South

The South, which was physically isolated from the other regions, was the smallest region with the smallest population. However, density was higher than in the North. Even though 89.3% of its population was in the rural areas in 1970, it was the least rural of the regions. Regional per capita income between 1960-79, was a little above average, but real increase in per capita income was 1.0% per annum. Since average annual rate of population growth was higher (2.7%) for the 1960-80 period, it

could be said that rapid rate of population growth dragged down the rate of per capita income.

The high rate of population growth was mainly a result of high natural increase. CBR was very high and there was only a 1% decline in CBR during the 1960-70 and 1970-80 periods. TFR and GRR also showed an increase. Fertility declines were only in the 30-44 age group. The rate of net emigration was also low. Thus, high fertility resulted in a higher than average proportion of child population (40.2%). Working-age population was lower than average but nevertheless high (53.7%). Child dependency ratio was also a high of 75%. High fertility was believed to be the result of high desired family goals and a small percentage (18% in 1975) of contraceptive users.

For the South, the rate of technological progress in terms of the increase in yields of paddy, maize, kenaf, cassava and sugarcane, was negligible. Paddy and maize yields which were average yields, and cassava and sugarcane yields which were lower than average, showed no improvement over the period 1968-75. However, if we consider rubber yields (the main crop grown in the South), which were said to have increased due to the adoption of HYV rubber, it can be said that there was some technological progress. (Unfortunately, data for rubber yields was not available.) Fertilizer use rose dramatically for crops that included the South's main agricultural products, rubber, coconut and palm oil, but fell for rice and field crops. Machinery (tractors and water pumps) use was not as much as in the other regions, the quantities being smaller, probably due to the South's smaller size. As for irrigation facilities, only 54% of irrigable land was irrigated in 1968 which meant that there was much room left for development of irrigation. This was done as the South's share in total irrigated area rose from 5.5% in 1977 to 8.4% in 1981.

Regional income distribution figures showed that in 1973, only 15.2% of households in the South were in the low-income category, while 10.5% were in the highest-income category. Income distribution pattern in the South was therefore relatively more favourable than in the North-east and North. Tenancy holdings were also relatively limited. The percentage of tenancy holdings was 4.4% in 1973 but increased slightly to 5.5% in 1975. Tenant households were, however, 17.5% of total agricultural households in the South. There was also a small proportion (13.3%) of agricultural households who were in debt. Size of holdings

was also relatively small in 1975.

In sum, for the South, although all three factors were seen to have explained poverty, the high and stable rate of population growth seemed to be the main determinant, followed by the low rate of technological progress. Incidence of poverty was 31% in 1975 and this was a decline from a high 38% in 1968.

The Central (excluding Bangkok)

The Central region which is considered to be the heart of Thailand is different from the other regions in many aspects. It is where the capital city and seat of the government, Bangkok, is located. Its soils are rich and it is where rice is mainly cultivated. It is also where infrastructure is concentrated. In short, it is the most developed and favoured region. As such, it had the second largest population, and with an area smaller than the North, population density was highest in the Central region. Excluding Bangkok, 90% of the region was rural. Poverty existed, but the proportion of population in poverty was small (14% in 1975). However, rural poverty and urban poverty incidences were almost the same (15% and 14% respectively).

Regional per capita income during 1960-79 was above average, and the real increase in per capita income was 2.8% per year during 1962/63-1975/76. Population growth rate was the lowest among regions, but increased from 2.1% in 1960-70 to 2.4% in 1970-80. This meant that real per capita income growth was faster than population rate of growth. Urban population rate of growth was also higher than rural population rate of growth, but both were relatively low. Relatively low population growth rate can be explained by a dramatic fall in CBR during 1964-67 and 1974-76. TFR and GRR also showed marked declines during this period. Low fertility is thought to be the result of a high percentage (45% in 1975) of contraceptive use and of increasing urbanization. There was also a marked decline in mortality which was thought to be the result of greater urbanization and increased supply of piped water. There was net emigration before 1970 which could be explained by increased pressure of population on land, the closeness of areas to Bangkok and the prospect of higher incomes in Bangkok. The effect of a low rate of population growth is reflected in the lower than average proportion (36.1%) of child population in 1981. The proportion of working-age population was however, higher than average (57.2%) which reflects net immigration rates during

the 1970s. The child dependency ratio was therefore, less than average (63%).

The rate of technical progress in terms of land productivity, though low, was probably the highest among all regions. Yields of major crops reflected higher productivity since they were above average, but except for sugarcane, there was not much improvement in yields. Labour productivity (real per capita income growth) also showed a positive growth between 1968/69 and 1975/76. Higher levels of productivity as compared to other regions can be explained by higher levels of technology adoption. In general, machinery (tractors and water pumps) use was largest in this region, so also was fertilizer use in major crops. Fertilizer use in the Central region was 47.3% of the total, and in 1971-75, growth rate of fertilizer use was fastest for rice and other crops in the Central region. This higher rate of technology adoption was probably due to the fact that irrigation facilities were concentrated in this region, farmers had higher average incomes and were therefore able to afford modern technology, there was also larger holdings, more landlords and more tenants, all of which led to increased adoption of technology. It was believed that by the early 1970s, mechanization had done away with animal power in the Central plains.

Regional income distribution for 1973 showed that in the Central region, more households were in the highest income group than in the lowest income group, the majority were however, in the middle income group. Income distribution pattern was therefore relatively favourable. However, land distribution patterns showed increasing inequality in the distribution of land. The proportion of tenancy holdings was seen to be higher than in other regions and also increasing. The proportion was 29.3% in 1973 and 33% in 1975. Moreover, some provinces in the Central region had even greater tenancy ratios which were more than 50% in 1975. The ratio of tenant households was also high (41.3%). There was serious instances of land concentration in the hands of a few landlords who were also absentee landlords. There was evidence of increasing landlessness and indebtedness. The indebtedness ratio was highest (47.9%) in the Central region. Interest rates were also said to be 20% or more. Insecurity of tenure was high and therefore, farmers were not motivated to invest in long term farm improvements. This must have affected productivity.

Thus, for the Central region, poverty though small in incidence, seemed to have been brought about more by unequal distribution of land and tenancy problems than by rapid population growth and low rate of technical progress.

Bangkok

Bangkok metropolitan area was the centre of economic activity in Thailand. It is not surprising therefore, that per capita income was three times that of the national average. Yet, the real increase in per capita income was 0.8% per annum which was below the high and increasing population rate of growth (3.7% in 1960-70 and 4.3% in 1970-80). Population in Bangkok, more-than-doubled between 1960 and 1980. As such, rapid rate of population growth could have explained the existence of urban poverty in Thailand.

Most of the growth in population was the result of high immigration rates. Bangkok was the single most important destination for migrants. Bangkok also had the lowest mortality in terms of both CDR and infant mortality rate. Fertility was a little above average and was kept low with high contraceptive use (50%) and with women marrying later than in other regions. Thus, in 1981, the child population in Bangkok was lowest in the country (29.1%), child dependency ratio was also low (44%), but the proportion of working-age population was highest (65.7%). Population growth in Bangkok was therefore, mainly the growth in labour force. This growth in labour force probably had serious repercussions on productivity of labour, since during 1968/69-1975/76, real per capita income was seen to be declining by 2.9% in spite of the presence of highly concentrated infrastructural facilities and other productivity-raising investments in health and education. However, Bangkok's households seems to be comparatively well-off in 1973, since 44.5% of households were in the highest income group and only 0.7% were in the lowest-income group.

Therefore, for Bangkok, the pressure of population in the working age group and low productivity seemed to be the dominant determinants of poverty. Bangkok was the least poor of all regions in Thailand with a poverty incidence of 12%. However, the proportion of the poor in Bangkok in the total poor population was seen to have increased three times during 1968/69 and 1975/76.

Summarizing our findings, it can be said that on the whole, poverty in Thailand during the 1960s and early 1970s, was determined by rapid rate

of population growth, low rate of technological progress, and unequal income and land distributions. But regional variations in poverty incidence need to be explained by regional variations in population growth rate, rate of technological progress and income and land distributions. For the poorest region, the Northeast, rapid population rate of growth brought about by high fertility, very low rate of technological progress and an income-distribution system that discriminated against the poor, were all important determinants of poverty (mainly rural). For the second poorest region, the North, the pressure of population growth was not as intense as in the Northeast and the South, there was also a higher rate of technological progress than in the Northeast and the South, but there were problems related with unequal land distribution which were worse than in the Northeast and the South. This seems to be the factor that was most important in determining poverty. As for the South, high population growth rate and more specifically, high fertility seemed to be the dominant determinant followed by the low rate of technical progress. Income-distribution in the South seemed to be more favourable than in the Northeast and North. For the Central region (excluding Bangkok), unequal distribution of land seemed to be the most important factor determining poverty. With a large working-age population, the pressure on land seems to have resulted in land problems. For Bangkok, the high population rate of growth, and more specifically, a high growth of the labour force seemed to have put pressure on limited resources with the resultant fall in labour productivity.

Thus, although the three determinants were all important in explaining poverty at the national level, they differ in importance when poverty is explained at the regional level.

This analysis of poverty in Thailand suggests policy implications related to the three determinants which will be considered in the next concluding chapter.

Chapter 6

CONCLUSION

This last and concluding chapter will consider policy implications suggested by the earlier analysis with some concluding remarks.

Generally, for the whole country, poverty can be further reduced through a combination of policies that reduce population growth, encourage technological progress, and improve the distribution of income and of land.

Family planning programmes are the most widely accepted and practical aspects of population policies. But population control policies need not be confined to support of family planning. Singapore has used housing and tax policies to discourage large family size, India and Sri Lanka have used direct payments to encourage sterilization, China gave bonuses and preferences for one-child families, and tax and housing disincentives for families with more than two children in at least some urban areas. To control fertility in the short run, specific policies can be adopted. Todaro (1981, p. 194) lists them as follows. First, the government can establish family planning programmes to provide health and contraceptive services in order to encourage the desired behaviour. Second, it can persuade people to have smaller families through the communications media and the educational process, both formal (school system) and informal (adult education). Third, it can deliberately manipulate economic incentives and disincentives for having children, for example, through the reduction or elimination and/or the imposition of financial penalties for having children beyond a certain number, through the establishment of old age social security provisions, through the subsidization of smaller families through direct money payments. Fourth, it can attempt to re-direct the distribution of its population away from the rapidly growing urban areas as a result of massive rural-urban internal migration by eliminating the current imbalance in economic and social opportunities in urban as compared to rural areas. Rural development programmes are increasingly being emphasized in development strategies of LDCs, in part to stem the rising tide of rural-urban population movements and thus to promote a more geographically balanced distribution of the population. And, last, it can coerce people into having smaller families through the

power of state legislation and penalties. The task of spreading birth control among the masses in LDCs is however, not without difficulties, because this must occur in populations that are very poor, illiterate or semi-illiterate, often with impaired health, and mostly living in traditional communities. Thus, the government must build up an administrative apparatus to reach individual poor families in villages and city slums.

Technology improvements can be made through productivity-augmenting policies that will raise the productivity of the poor groups. This means that more capital equipment, more fertilizers, more HYVs, etc. must be provided. These must be supplemented by other productivity-raising measures such as improvements in infrastructure, i.e. irrigation and road networks, and human investment such as improving the quality of poor people through education and health services. These measures to raise the productivity of poor groups can be included in a rural development package and must be designed to suit the needs of the poor groups in each region. Such rural development policies will be efficient if the poor are able to, through multiple-cropping, improved fertilizers, etc., increase productivity high enough to raise the average rate of return on aggregate investment. These policies, if properly designed, can be the most effective means of zeroing in on the poor. Successful technology reforms can contribute to improved distribution if they are transformed so as to eliminate the enormous productivity differentials.

Income/land distributions can be improved through asset redistribution programmes such as land reform and direct public policies which increase the incomes of the low-income groups, such as social welfare programmes, or employment guarantee at some reasonably set wage, and providing and extending basic educational and health services to the poor. These policies will also favourably affect population growth and technological progress.

Land reform refers to the redistribution of land ownership in favour of the poor. It is believed that this change from a landlord-tenant tenure system to a system of peasant proprietorship would increase agricultural output. However, the establishment of peasant proprietorship alone will not transform the conditions of poor farmers and agricultural labour. Peasant proprietors must be supported by a comprehensive programme including supervised credit, organised marketing, agricultural education and extension services.

The need for land reform is often associated with technological change. The pattern of landholding, the extent of fragmentation of land, the character of tenancy relation and the existence of exploitation through using is believed to be impediments to technical change and therefore these structural obstacles need to be removed. For, even in situations where there are few serious structural obstacles, any attempt to bring about a technological transformation without prices structural reforms is likely to be associated with a distributive bias in favour of the rural rich.

Land reform programmes can be visualized with two alternative ends in view: promotion of an egalitarian peasant economy, where landlessness and wage labour will be eliminated as far as possible; and, promotion of a collective agriculture, which involves the abolition of private property in land and the consolidation of large areas into a single production unit. This collective agriculture is believed to have several advantages over small peasant agriculture. First, it is likely to be more effective in ensuring an egalitarian income distribution and thus in eliminating rural poverty. Second, it makes it easier to plan production and control the marketed surplus. Third, it is better able to undertake investment in new technology. Peasants may be able to mobilize more resources collectively than they can if acting individually. Fourth, it is better to take advantage of any possible economies of scale that may arise in agricultural production. Fifth, it makes possible a rational and efficient utilization of labour. This is particularly important in the context of South and Southeast Asian countries, given their relative abundance of labour (Ghose and Griffin, 1980, p. 569).

Distributional policies are believed to benefit the poor by increasing "linkage" of the poor to the faster-growing segments of the economy so as to increase the flow of indirect benefits, and by providing greater direct support to productive activities upon which the poor are heavily dependent and which have a potential for efficient expansion (Ahluwalia, et.al., 1979, p. 325). It is believed that for countries like Thailand, which tend to have more rapid growth and less equal distributions, improved distribution is often more effective in reducing poverty than is accelerated growth.

Direct public policy such as social welfare programmes is known to have met success in reducing poverty in Sri Lanka. Its social welfare

programmes included food subsidy programme, health programme, and educational programme. Sri Lanka's achievement can be viewed as a general approach of spreading entitlements widely through direct public policy.

For Thailand, the above mentioned broad policies are necessary for poverty reduction. However, since the degree of poverty varies among regions, the need for specific policies also varies. Since limited resources must be put to best use in the further reduction of poverty, policy prescriptions for individual regions and areas must be according to the special needs of that region/area. The situation in other regions must also be taken account of in prescribing policies for a particular region.

For the Northeast, the poorest region, policies to eradicate poverty must include policies to reduce the high rate of population growth in the short run, such as family planning programmes which are measures that supply technology of family limitation to the poor. Other measures that will motivate the poor to lower desired family size, such as adult education, incentives and disincentives for having children must also be provided. Rural development policies to discourage out-migration are also required. Rural development policies must include improvements in irrigation facilities, provision of credit and input subsidies, marketing improvements, education and extension services which can help raise the productivity of the poor. These measures support technological improvement policies which provides more machinery, more HYVs, more fertilizers, etc.. Measures to increase skills of agricultural labourers through the provision of basic education and health are also required. For the Northeast, to improve income distribution, more direct public policies must be adopted. Social welfare programmes that would include old-age security provisions, more basic educational and health facilities are required. In other words, subsidies must be directed to the high poverty groups. Since the Northeast is the poorest region, priority must be given to the Northeast in implementing policies.

For the North, since high rate of population growth through natural increase is not a problem like in the Northeast and South, attention must be given to rural development to discourage out-migration to urban areas. Since intensity of land use is low in the North, technical improvements and other measures to increase productivity need to be made as in the Northeast. However, most important of all is the need for land redistribution and direct public policy directed at the poor groups.

For the South, to lower fertility especially in the younger age groups of women was an urgent problem. More family planning programmes to encourage more contraceptive use and other measures to increase the motivation of the poor to lower their family size goals is required. To raise productivity, intensive development of land for the South's major crops, rubber, coconut and palm oil, i.e. more mechanization, more HYVs, more fertilizers, more irrigation, is required. To raise the standard of living and real incomes of the poor groups, especially more basic health facilities such as piped water and better sanitation are required.

For the Central, the most developed and favoured region, contraceptive use was almost saturated and therefore the problem of rapid population growth rested on urban population growth. Therefore, rural development policies to discourage urbanward migration especially to Bangkok was needed. Another important policy that needs to be implemented was land redistribution policy since the Central region is where the most unequal land distribution was found. Direct public policy to increase the living conditions of low-income groups are also required.

For Bangkok, the least poor area, but where urban population and with it urban poverty was rising, the need to discourage in-migrants who were primarily of working age was great. This can be done by rural development programmes in the areas near Bangkok (since the closeness to Bangkok was one of the major determinants of migration) and development of urban growth centres in other areas in the Central and other regions. The pressure of working-age population on limited resources has pulled down labour productivity and to improve this situation, more capital accumulation, more employment creation for the growing labour force is required. However, to attract more in-migrants, such improvements must also be provided in other parts of the country.

If the government can acquire enough resources to implement the above mentioned policies, Thailand will not only have continued success in poverty reduction, but also success in eliminating regional disparities in poverty incidence and numbers.

There have been some measures already implemented to deal with poverty brought about by rising population growth, unequal land distribution and imbalance between population in urban and rural areas. Family planning programmes were officially started in 1970 and have progressed rapidly, but more attention was given to the Central (including Bangkok) and North

regions. Many provincial towns have also seemed to be centres of dynamic urban growth and programmes to decentralize activity from Bangkok appear to have achieved some degree of success. However, public policy in Thailand has generally not favoured the poor. Education has lagged in the North and Northeast, health care facilities have also been unevenly distributed. However, there has been some effort on the part of the government to solve land problems. The Agricultural Land Reform Act of 1975 aimed at clearing and settling state land and redistributing land owned by landlords. The 1974 Act Controlling Rent of Paddy Land aimed at amelioration of tenancy conditions, the Ten Year Plan of 1973 aimed at speeding up of government recognition of ownership rights and the Committee for Enquiry of Farmers' Debt Problems (of 1974) and the Agricultural Court (1975) were to prohibit the resale of land and give financial assistance to farmers. The Land Reform Plan of 1975 was seen to have been impracticable. After 2 years of land survey, the reformed area of 300,000 rai was much less than the planned 1 million rai.

The Thai government did not make explicit mention of eradicating poverty and reducing income inequality in its national development plans until the Fourth Plan. However, it was only in its Fifth Plan that a major objective stated was to reduce absolute poverty and to accelerate rural development in backward areas. The most significant aspect of this plan was its poverty eradication programme. This programme specified target areas covering 216 districts and 30 sub-districts in the Northeast, North and South regions. It also specified economic and social targets and also financial targets. Key programmes specified were: the programme for creation of employment opportunity in rural areas, programme for the implementation of village activities, programme for the provision of basic services and production programmes. Whether the Fifth Plan will succeed in what it sets out to do through the poverty eradication programme remains to be seen.

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