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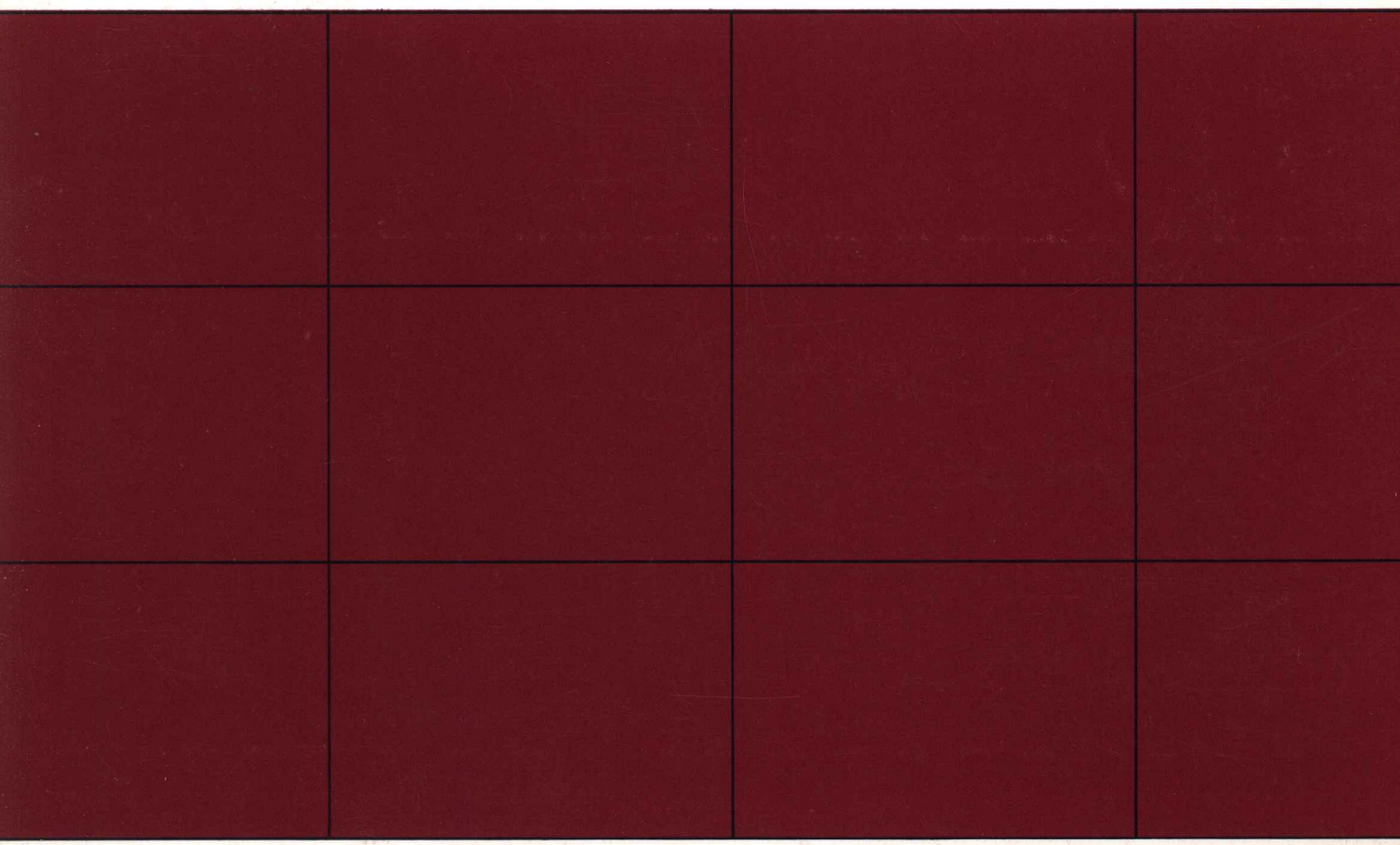

Thailand Development Research Institute Foundation

HUMAN RESOURCES MANAGEMENT

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PREFACE

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CHAPTER 1

INTRODUCTION AND SUMMARY

1.1 Overview

Development is the result of human labor, ingenuity, vision, and capacity for innovation, cooperation and change. Development not only depends on these qualities, it must continually enhance them to be sustainable. Thus the requisites of development are at the same time some of its principal benefits. Increased opportunity, income and choice; improved nutrition, health and well-being; increased educational attainment and skills; community cooperation, security, and cultural continuity are necessary for development. They are simultaneously some of its most important goals and results.

The important issues in human resource development thus include employment, unemployment and migration -- how people participate in development -- and the efficiency, quality, finance, pricing, subsidy, and equity of investments and services to enhance their ability to participate - principally, education, training, health, and family planning.

In this paper we analyze migration, employment, education and health. For each, we assess the current situation and trends, attempt to model or explain the underlying behavior, make projections through and beyond the Sixth Five Year Plan Period, and specify management and policy implications.

The analysis has some common characteristics. It is based on available data-sets, makes use of various econometric estimation techniques and ranges of assumptions about future conditions. We have tried to be explicit about the limitation of the data, the models and the assumptions. These limitations need to be kept in mind in interpreting the results summarized below and in the individual chapters.

Finally, the analysis has a common perspective. The view in this paper is of people as actors in development, not simply as acted upon. The focus is not on assessing " needs " but on understanding behavior. And the principal policy and management questions are not primarily how government should supply services, but rather how and when it should intervene in markets and when it should not.

1.2 Migration

Chapter 2 of the paper analyzes population growth and distribution. The total population in 1985 was 51.8 million. The growth rate has dropped from a peak of more than 3 percent a year in the 1960s to 1.7 percent. The population is still primarily rural. In 1980, the population living in municipal districts was 17 percent of the total -- 26 percent if sanitary districts with more than 5,000 people are included. The tempo of urban growth -- the difference between rural and urban growth rates -- was 3.2 percent per year between 1970 and 1980; 41 percent of this growth was attributable to natural increase, 29 percent to area annexation (redefinition of municipal boundaries) and 30 percent to net migration.

Migration pattterns have been and are highly volatile. While fertility and mortality did not change by more than 30 percent from one decade to the next, the Kingdom's migration rate more than doubled from 3.8 in 1960 to 7.8 in 1970, then dropped to 4.5 in 1975-1980; migration rates of some regions have shifted from negative to positive. Inter-regional and rural to urban flows are growing, as are urban to urban, and urban to rural flows; intra-regional and rural to rural flows are decreasing. Migrants are disproportionately young -- more than 70 percent under 30 -- and male; but the gender difference is decreasing.

Econometric modeling of migration flows among regions disaggregated between rural and urban areas (municipal districts are used as the definition of "urban") shows that migration is mainly a function of wage differentials. Distance, relative population, and farm-land availability are also significant. Urban unemployment rates affect urban to rural and urban to urban flows not rural to urban flows.

These relationships are then used to make four projections of population distribution from 1980 to 2005 based on a range of assumptions about future circumstance and policy:
(1) a "base case" in which current growth trends, wage and unemployment rates continue, (2) a "low agricultural price case" which assumes reduced rural wages but no other changes from the base case, (3) a "high unemployment case" which assumes high unemployment in Bangkok, but no other changes, and (4) a "decentralization case" which assumes narrowing wage differentials between Bangkok and all other regions. Results are as follows:

	Case 1	Case 2	Case 3	Case 4
Growth of Rural Population (1980 - 2005)	38%	34%	42%	39%
Growth of Urban Population (1980 - 2005, excluding Bkk)	96%	119%	100%	107%
Growth of Bangkok Population (1980 - 2005)	76%	86%	72%	65%
Population of Bangkok (000) (year 2005)	8579	9046	8383	8037

The projections are interesting both for their similarities and their differences. The similarities indicate strong underlying trends not greatly sensitive to varying sets of plausible assumptions. On the other hand, the differences are far from trivial -- particularly between Case 2 and Case 4 -- and indicate the importance of avoiding policies which might reduce agricultural incomes and implementing policies to encourage decentralization.

1.3 Employment

Employment is analyzed in Chapters 3,4, and 5, which deal with labor force growth, agricultural employment and seasonal variations, and open employment respectively. Results are summarized in the three sections which follow.

1.3.1 Labor Force Growth

Labor force growth depends -- with a lag -- on population growth, and on participation rates. The rate of population growth is projected to decrease from 1.7 percent per year to 1.1 percent by 2005. Participation rates for men do not vary greatly; they are consistently 95% to 99% of working age men not in school. Econometric analysis of national labor force survey data for 1977 - 1984 indicates that female participation rates are explained by rates of unemployment and underemployment, the ratio of children under 11 years old to female potential participants (the child dependency ratio), and -- for municipal areas -- the share of government employment to total employment. Child dependency ratios will decline in the future and this will

increase female participation. On the other hand, the government employment growth ceiling of 2% will tend to reduce female participation.

These findings are used to generate projections of the labor force for 1985-2005. The underlying demographic assumptions (eg; the child-dependency ratio) are from the population projections. Unemployment and under-employment are assumed to increase by 1-2 percentage points during the Sixth Plan and stabilize thereafter. Government employment is assumed to grow by 2 percent per year. The results are as follows:

	Participation Rate (%)	Rate of Growth of the Labor Force (% per year)
1985	90.81	
1990	90.96	2.75
1995	91.30	2.38
2000	91.48	1.99
2005	91.47	1.56

The results above are aggregations from projections done by regions and by municipal and non-municipal areas. The migration patterns (from the Base Case above) produce important differences. In non-municipal areas, net increases to the labor force decrease throughout the period. In Bangkok the net increase in the Seventh Plan period is higher than in the Sixth but then declines thereafter. In non-Bangkok municipal areas net additions to the labor force increase throughout the period.

1.3.2 Agricultural Employment and Seasonal Variation in Labor Demand

The overall employment situation in the Sixth Plan period will depend critically on labor absorption in agriculture. This is both a question of aggregate absorption and of seasonal employment. Agricultural employment decreases by 5 to 6 million during the dry season.

The share of agriculture in aggregate employment, which has been fairly steady at 70 percent is now jeopardized by reduced growth of cultivated land, by crop price changes, and will also be affected by the diversification of agriculture to crops with widely varying temporal and total labor requirements per rai. A non-linear programming model is used to estimate the employment consequences of crop price changes and diversification during the Sixth Plan period. Crop price forecasts to 1991 are based on World Bank estimates and except for sugar, soybeans and cotton, all crops prices are expected to remain constant or decrease in real terms. Costs of production and wages are assumed constant in real terms. Preliminary results predict an annual growth of labor demand in the dry season of 2.40 % and in the wet season of only 0.55%. Dry season demand will thus increase at about the same rate as the rural labor force -- but seasonal unemployment is already very high -- so the dry season employment growth won't help much. The low growth of wet season demand is potentially a very serious problem. It is much lower than the projected growth of the rural labor force. If this scenario is accurate, three consequences could result: real wages in rural areas may fall, rather than remain constant as assumed in the simulation; underemployment may increase rapidly; and migration from the rural areas may increase, resembling Case 2 , the " low agricultural price case " of migration patterns (above) rather than the Base Case.

Seasonal unemployment is not new. It is a response to the decrease in labour demand in the dry season. Analysis of job seeking behavior and migration response to seasonal unemployment indicates that seasonal unemployment should be viewed as a problem -- not as voluntary withdrawal from the labor force, as some have suggested. Fifty eight percent of potential seasonal migrants were active in seeking work, only 21 percent said they didn't want to temporarily migrate to work elsewhere in the dry season. Econometric estimates of seasonal migration suggest that those most likely to migrate during the dry season are young, less educated and clustered in villages with numerous other migrants -- indicating the importance of information flows, and a potential role for government policies to improve information flows. This pattern also implies that access to migration opportunities tend to become more unequal over time. This suggests that government job creation programs should be targeted to the backward villages, with relatively little opportunity for seasonal migration because of information constraints.

Based on the same data set that for the first yields a complete picture on seasonal migration patterns for the whole kingdom, information was also generated on those who participated in the Rural Job Creation Program. By analyzing the observed

pattern of participation in the program, one can conclude that, in terms of helping to ease the burden on the rural population in the dry season, the program has mixed success. Within a particular village, the program seems to be reaching the right people; those with no work, and those in households with little opportunity for seasonal migration. However, it is observed that the program is not sufficiently reaching those villages with little seasonal migration opportunities, due to the information constraints. This implies that the program tends, under the observed pattern, to contribute to the inequality across villages, which results from the pattern of information flows on seasonal migration opportunities.

1.3.3 Labour Market Segmentation and Open Unemployment

The openly unemployment are not great in number compared to the total workforce in the whole kingdom. However, the problem for the better educated groups, particularly at the vocational level, is quite severe. The open unemployment rate for those with vocational education was about 12.7% in 1984, even using the more conservative definition of open unemployment used by the National Statistical Office (NSO) prior to 1983.

The better educated workforce has been growing rapidly due to improved educational patterns in the country. In the past, they have been absorbed mainly by the government. The government employs a much higher share of the better educated in its work force compared to the private sector, and up until a few years ago, government employment has been growing much faster than in the private sector. The past crucial dependence of the better educated group on government employment is not a healthy situation. First, it can create a distortion in the relative rewards to education. Government wages are notoriously rigid, and not very responsive to supply and demand forces. Also, the past rapid growth in government employment, which leads to a high demand for the better educated workers, seems to have contributed to a fairly rigid structure of wages across educational groups over time, even though the educated share in the labour force has been growing fast. The situation can lead to a vicious circle, as high rewards for education leads to a higher demand for more educational places, which in turns leads to a rapid increase in the supply of the better educated workers, which then requires that there be sufficient jobs for these workers. The fast growth in government employment also creates pressure on the government budget at a time when the public sector fiscal position is very tight.

In the future, the private sector will have to play a more important role in absorbing the better educated workers. Not all private sector jobs are feasible alternatives to government employment, however. The better educated want to find work in the "formal" sector rather than in the "informal" sector. Results based upon an econometric analysis of labour market segmentation are presented to give a picture on the functioning of the formal and informal labour market. Basically, in the formal sectors wages are higher, and there is rationing of places. Those who cannot get in can either go and work in the informal sector or become unemployed while waiting for a job in the formal sector. In the informal sector, there is hardly any reward for being educated, thus it is not an attractive alternative for the educated group. A high proportion of these who cannot get into the formal sector becomes unemployed rather than go to work in the informal sector.

Based upon this view of how the labour market works, a projection of open unemployment in the municipal areas is presented. The focus on the municipal areas seems fairly appropriate, because it can be expected that those educated unemployed in the rural area will probably adjust through migration. Some reverse migration back to the rural areas may also occur if the open unemployment problem in the cities becomes very bad. However, with the prospect on agriculture presented in Chapter 4, this is probably going to be small. The projections are given to the end of the Seventh Plan, 1996. In fact, by the end of the Seventh Plan, work force growth in the municipal areas will still be high (Chapter 3), so the trend on open unemployment will not differ much between the Sixth and Seventh Plan. It can be expected that the municipal open unemployment rates will rise through out the Sixth and Seventh Plan, from 4.4% in 1986 (using the open unemployment concept employed by the NSO since 1983), to 5.4% by 1991, and 6.5% by 1996. The group with the most rapidly rising rate will be those with university education, where the open unemployment rate will rise from 3.6% in 1986 to 5.7% in 1991 and 7.1% in 1996. The scenario uses formal employment growth derived from the base case in TDRI's latest macroeconomic forecast, with GDP growth averaging 4.6% in the Sixth Plan. Another was also tried which had industries and services growing by about 1% faster per annum than the base case. It does not make too much difference. While the open unemployment picture improves a little compared to the base case, the change is very slight. The main reason why open unemployment will continue to grow fast is that the government is currently relatively more important in the employment of the better educated, especially at the university level, where it is currently employing about 50% of these workers in the municipal areas. The private formal sector may grow faster than the government over the next 10 years, but because the supply is increasing rapidly, employment growth cannot keep up with the supply increase. The situation

may eventually get better, but probably after the Seventh Plan, as work force growth slows down, and the share of educated employment of the private sector increases.

1.4 Education and Health

Chapter 6 analyzes education and health. Both are goals of development and both also contribute to development. Increased availability and changing patterns of demand for education and health services have important immediate consequences for public budgets and management decisions, and longer-term consequences for average future family size, labor force participation, labor force growth, migration, and labor skill, trainability and productivity.

1.4.1 Status

Educational attainment and health status show impressive gains over the past two decade. Between 1977 and 1984 national attainment of completed upper elementary and lower secondary doubled or nearly doubled from 4.3 to 11 percent and from 2.7 to 4.3 percent of the total population respectively. Attainment of upper secondary, vocational, and university also doubled or more than doubled during the period but from small bases. The modal attainment of the population in 1984 as in 1977 was still lower elementary -- 41 percent in 1984.

Since 1965, life expectancy at birth has increased by five years to 60 for males and 66 for females, infant mortality has been cut in half to an average of 45 per 1,000, and the leading causes of death are now accidents, heart disease and cancer. Twenty years ago the leading causes of death were diarrhea disease (still a leading cause of illness), tuberculosis and pneumonia.

The gains are uneven regionally. Attainment of lower secondary education in Bangkok in 1984 was 9.3 percent, two and half times higher than the proportion in the rest of the Kingdom; attainment of upper secondary was 4.7 percent, seven times higher; and university attainment was 3.5 percent, more than thirteen times higher. These educational attainment differences reflect past availability of schools, social demand for education, demand for graduates and migration. Infant mortality

rates are twice as high in the Northeast as in Bangkok, and overall rural rates are 25 percent higher than urban rates. These health differences mean that Thailand must simultaneously respond to illnesses which are characteristic of high income countries and persisting condition related, in part, to poverty and the environment.

1.4.2 Availability of Services, Prices and Patterns of Demand

Major capital investments and training of teachers and health professionals in past plan periods have made primary and lower secondary schools, and health posts, district and provincial hospitals and primary health care services widely available geographically. Rural/urban and Bangkok/Rest-of-the-Country differences continue and are inevitable but nothing like as great as they were two decades ago.

Government is the principal provider of education and health services; it sets prices, provides subsidies and establishes the conditions of entry of private providers. Prices for most services are set below market; non-price rationing is accomplished by examinations (education) and by queues (health), but some informal price mechanisms appear to operate at the primary and secondary education levels at least. These informal pricing mechanisms and distortions exist in both public and private schools (eg: there is a high positive correlation between fees and parental donations in public secondary schools, and there are " tea money " and other payments at both public and private schools); the results are large variations in per student expenditures and in school quality ; and school quality variables, in turn, are correlated with student performance.

Degree of subsidy increases with the level of service; for example the subsidy per patient is highest for in-patient services in public tertiary hospitals in Bangkok and per student in the closed universities; important subsidies in total amount though not per capita at the lower level are primary education, primary health care, and family planning. Costs to consumers generally also go up with level. The one important exception to this generalization is at the secondary education level, where total direct private costs appear to exceed those at the universities.

There are relatively few barriers to entry by private providers in health; wealthier households or those with high opportunity costs use private practitioners; there are more barriers to entry of private providers in education -- mainly tuition ceilings. New schools without established reputations cannot command the same level of extra and informal payments from parents as competing schools with high reputations.

Household demand for services and for (perceived) quality is increasing, partially as a result of increased household income and perhaps because of smaller family sizes - the " quality/quantity " trade-off. In health, total expenditures per capita are 1,000 Baht a year and are projected to increase to 1,600 by 1991. Private expenditures now account for 69 percent of total expenditures -- up from percent 66 percent in 1979. The MOPH accounts for 19 percent and other government agencies for 12 percent. Household income elasticities of demand for medical care measured by expenditures for public and/or private care are estimated to be:

Kingdom	1.62
Bangkok	2.05
Other urban	1.68
Rural	1.35

Private expenditures are mainly for curative services. In all regions there is a shift in consumption with changes in income, place of residence, prices and supply, from self-treatment with purchased drugs to public sector medical care, from health centers to district or provincial hospitals and from public sector medical care to private medical care -- where available.

Total expenditure data are not available for education; and some proportion of private expenditure is informal. But trends and demand can be inferred from enrollment data. The data show that retention and completion rates are increasing. Enrollment at the primary level is at or near 100 percent of the nominal age group, but there is some counting of over-age students, and repeaters in the data. More important, the number of students entering the sixth grade and presumably completing primary school is increasing -- by 15 percent between 1981 and 1985 -- even though the primary school age group grew very slowly during the period and is now stable or decreasing in most regions.

The enrollment ratio in academic lower secondary in 1985 was 35.1 percent and in academic upper secondary, 15.2 percent. Enrollment in vocational schools was an estimated 15 percent of age group 15 to 17 -- only slightly less than upper secondary. The absolute numbers of students going on to the next levels is increasing even though continuation rates are decreasing slightly. Between 1982 and 1985, the absolute numbers going on to lower secondary increased by 10 percent, and the number going on to upper secondary increased by 12 percent. The decreasing continuation rates are thus not evidence of decreased demand for post primary academic schooling. They are a reflection, instead, of higher completion rates at levels just below. But they may also reflect the relatively high private costs and supply constraints at the secondary level. If vocational schools are added, the option to continue beyond lower secondary is exercised by most students who complete lower secondary. The proportion of lower secondary graduates going on to either upper secondary or vocational school was 94 percent in 1982, 92 percent in 1983 and 86 percent in 1984. Again, the absolute numbers going on increased by 11 percent, even though the continuation rates decreased.

Enrollment in teachers colleges was 73,000 in 1985, 1.9 percent of age group 18 to 21. Enrollment in closed universities was 98,000, 2.5 percent of the age group, or a total of 4.4 percent of the age group in institutions of higher education to which admission is rationed by examination scores. Total enrollment in 1984 in the open universities, where there are no enrollment ceilings and no admissions requirements except completed secondary education, was more than 645,000 students (NEC) -- indicating a very high level of social demand for higher education. Indeed, Ramkamhaeng is now one of the largest universities in the world.

Private institutions are enrolling a diminishing proportion of secondary students and university students. In 1985, private schools enrolled 13 percent of lower secondary students and 9 percent of upper secondary -- down from 15 percent and 12 percent respectively in 1982. Private enrollments in Bangkok are higher, 28 percent of lower secondary students and 14 percent of upper secondary students in 1985, but also decreasing. New schools face various barriers to entry. Conversely, private schools are major providers at pre-school and vocational and technical levels where the barriers to entry are lower or nonexistent. Private schools account for almost all pre-school enrollment and for 44 percent of vocational enrollment nationally, and 69 percent of vocational enrollment in Bangkok.

Finally, simple average projections to 1995 show secondary level enrollment growing faster than the secondary school age group, particularly outside Bangkok. The projections show estimated national enrollment ratios as follows:

Projected Secondary Enrollment Ratios

	1985	1990	1995
Lower secondary	35.1	41.7	48.9
Upper secondary	15.2	19.0	22.5

Since these projections are based on problematic data, particularly for 1985, and include the affects of relatively high private costs and constrained supply at the academic secondary level, they can be viewed as in the medium to lower range of likely enrollments at these levels.

Econometric analysis of the data of a sample of secondary schools collected by the NEC suggests that -- except for a small number of prestigious private schools in Bangkok -- private secondary schools are second choice institutions; second to high quality public schools for parents with high aspirations for children who may not meet the merit criteria of the best public schools, but preferred to lesser quality and lower (informal) price public alternatives.

An important (tentative) conclusion of the analysis of demand and supply behavior at the secondary level is that the current system provides neither the benefits of a market system in terms of supply nor of a merit system in terms of quality or equity.

1.4.3 Management and Policy Options

The management and policy issues discussed in Chapter 6 relate to prices, subsidies and private provision and alternatives which might free public resources for provision of services where the economic case for subsidy is strong, and on other changes which might improve quality, equity and efficiency.

In education, the focus is on improvement of basic data, improvement of quality at the primary level, re-establishment of a merit/subsidized system with decontrol of private provision or -- alternatively -- decontrol of fees at the secondary level, and altering fees at the higher education level.

In health, the focus is on selective reduction and reallocation of public subsidies; public incentives to influence the pattern of private expenditures in directions consistent with medical and public health criteria and economic efficiency and equity criteria; increased cost recovery in public hospitals; increased private provision of some curative services (with due concern for issues of quality, equity, cost and regulation) ; and employer and employee supported health insurance schemes in the modern industrial sector. The objective would be to free public resources for programs where the economic arguments for public provision and subsidy are strong, including existing programs of vector control, EPI and primary health care, and new or expanded programs of prevention and promotion to deal with accidents, environmental problems (eg: pesticide use and consequences in rural areas), food and drug control, cigarette smoking, AIDS, hepatitis B , testing and eventual introduction of malaria vaccine(s), and " stop loss " insurance coverage for catastrophic illness cases.

CHAPTER 2

POPULATION GROWTH AND DISTRIBUTION : AN ECONOMIC ANALYSIS OF MIGRATION DECISIONS

2.1 Introduction

Thai development planners have become increasingly concerned with aspects of internal migration and urbanization as a result the of uneven geographical distribution, particularly the heavy concentration in Bangkok Metropolis and its suburban areas. Policies for population redistribution were included for the first time, in the Fourth Five Year National Economic and Social Development Plan (1977-1981). The reemphasizing of the Fifth Five Year Plan (1982-1986) on decentralization of economic activities and population away from the metropolitan areas reaffirms the awareness of the Thai government on the issues. The major policy areas stated in the Fifth Five Year Plan which are directly concerned with internal migration and urbanization are:

a) The specific areas development programs including the development of basic industries in the Eastern Seaboard Region. This policy is designed to pull migrants away from Bangkok and its vicinity and to bring about more balanced growth in the future "urban system".

b) The development of regional urban growth centres, lower order growth centres and rural communities to serve the national economic restructuring. At the same time, the Bangkok Metropolis and its vicinity will be developed in a direction that will uphold the policy to diffuse the growth to other regions.

Despite the serious concern with the aspects of population distribution, human settlement and internal migration, the basis of policy formulation, its validity, and the coordination of various policy instruments remains a relatively new field of operation for the national planners. The main objective of the study in this chapter is to provide an analysis of migration behaviors and to assess precisely the relationships among the interregional migration streams and economic differentials among regions. Findings from this study are then used to project intersectoral migration flows - urban to urban, rural to rural, urban to rural and rural to urban - and, hence regional population distribution under different plausible conditions. These exercises should be particularly useful for policy makers since they provide an analytical framework which could be used to evaluate impacts of both implicit and explicit urbanization and population distribution policies.

To establish a framework for subsequent analysis, we start by reviewing population growth, distribution, migration trends as

well as some basic factors which underlie migratory behaviors (section 2.2). To better understand the issues, we then explain some certain complexities of the migration model adopted in this study. The estimation results are also briefly discussed (section 2.3). Having investigated migratory behavior, we are then in a position to define the four sets of assumptions which will be used for projecting interregional migration and subsequently population growth and its distribution at regional levels. The outcomes of population forecasts and their implications are then discussed (section 2.4). The underlying demographic assumptions are detailed in the Annex to this chapter.

2.2 Demographic Trends during the 1960s and 1970s

2.2.1 Population Size and Overall Growth

During the past three decades Thailand has experienced rapid decline in population growth which was facilitated by the quick acceptance and practice of family planning by Thais, both in rural and urban areas. The annual population growth rate had declined from the peak of over 3 percent per annum in the early 1960s to around 2 percent at the end of the 1970s and is expected to reach 1.6 percent per annum by the end of this century. The population of Thailand was enumerated at 27.6 million in 1960. The population grew to 35.6 million in 1970 and to 46.7 in 1980. 1/

2.2.2 The Regional Rural-Urban Distribution of Population

Thailand is primarily a rural country. The country's level of urbanization (defined as the proportion of total population living in urban areas) was 17.0 percent in 1980 if "urban" is taken to be municipal. However the degree of urbanization would rise to 22.5 percent and 26.4 percent in 1970 and 1980 respectively, if sanitary districts which contain more than 5,000 persons would also be counted as urban. (See Table 2.2.1). Since the data on rural-urban migration for the specific regions used in this analysis which are taken from the Labor Force Surveys, do not identify migration flow of sanitary districts separately, the term urban here will be restricted to municipal areas.

1/ At mid 1985's, Thailand's population was registered at 51.8 million persons.

TABLE 2.2.1

DISTRIBUTION OF POPULATION BY REGION 1960, 1970 AND 1980

Unit:million

Region	1960		1970		1980	
	Rural	Urban	Rural	Urban	Rural	Urban
Northeast	8.68	0.31	11.58	0.45	15.06	0.64
	(96.6)	(3.4)	(96.3)	(3.7)	(95.9)	(4.1)
North	5.36	0.37	7.05	0.44	8.42	0.67
	(93.5)	(6.5)	(94.1)	(5.9)	(92.6)	(7.4)
South	2.94	0.33	3.82	0.45	4.90	0.70
	(89.9)	(10.1)	(89.4)	(10.6)	(87.5)	(12.5)
Central 2/	5.57	0.56	6.82	0.72	8.77	0.96
	(90.9)	(9.1)	(90.5)	(9.5)	(90.1)	(9.9)
Bangkok	0.44	1.70	0.58	2.50	-	4.70
	(20.0)	(80.0)	(19.0)	(81.0)	-	(100.0)
Whole Kingdom	22.98	3.27	29.84	4.55	37.19	7.63
	(87.5)	(12.5)	(86.8)	(13.2)	(83.0)	(17.0)

Sources: Thailand, National Statistical Office (1962,1973,1983).

2.2.3 Urban and Rural Growth

Examining data in Table 2.2.2 shows that the average annual growth rate of the urban population exceeded that of the rural population in all regions. Focusing on each region, it can be seen that the urban population growth rate of the South Region during the 1970s was the highest, averaging over 4.2 percent per annum while that of the Central Region was the lowest, averaging below 3 percent per annum.

2/ To insure comparability over time, the Bangkok Metropolis will be excluded from the Central region where it is often included in 1960 and 1970 census publications.

TABLE 2.2.2

URBAN AND RURAL GROWTH RATES: 1960-1970 AND 1970-1980

(% change per annum)

Region	1960-1970		1970-1980	
	Rural	Urban	Rural	Urban
Northeast	2.90	3.60	2.60	3.50
North	2.80	1.80	1.80	4.10
South	2.60	3.30	2.60	4.20
Central	2.00	2.40	2.50	2.90
Whole Kingdom	2.60	3.40	2.10	5.30

Sources: See Table 2.2.1.

It should be noted that in all regions, the tempo of urbanization (defined as the observed difference between the rate of urban and rural population growth) is a good indicator of the speed at which urbanization is taking place. The tempo of urbanization in Thailand had increased from around 0.8 percent between 1960-1970 to 3.2 percent between 1970-1980. However some caution should be exercised when interpreting these figures since urban growth might not only be the result of natural increase and net migration but other factors such as an expansion of urban areas, through changes in urban boundaries or a reclassification of areas from rural to urban might also play a significance part in urban growth.

Urban population growth between 1960-1979 by component of growth is shown in Table 2.2.3. It can be seen that a substantial part of urban growth during 1970 to 1979 was a function of area annexation. Urban areas gained approximately 823,000 persons through area expansion. About 85 percent of this gain was due to redesignation of the Bangkok Metropolis. Without this change in boundaries, the annexation would contribute only around 5 percent to urban growth in the 1970s (ESCAP, 1982) and the urban growth would have been reduced to the similar rate as those of the 1960s.

Lastly, it should be noted that although there were some reclassifications of urban units during the 1970s, the total number of municipal areas in Thailand, 199, remained unchanged. This is because an additional unit created by a splitting of Ubon Ratchathani into two municipal units was offset by the merger of Phra Nakhon and Thonburi into one municipal area.

TABLE 2.2.3

ESTIMATED URBAN POPULATION GROWTH BY COMPONENTS OF GROWTH 1960-1970 AND 1970-1979

Component of Growth	1960-1970		1970-1979	
	Number (Thousands)	Percentage	Number (Thousand)	Percentage
Natural Increase	916	49.90	1142	40.80
Area Annexation	120	6.50	823	29.40
Net Migration	800	43.60	835	29.80
Total	1836	100.00	2800	100.00

Source: ESCAP (1982).

2.2.4. Overall Migration Trends

The patterns and trends of migration of Thailand during the 1970s and 1980s clearly demonstrate its dynamic nature. While fertility and mortality did not change by more than 30 percent from one ten-year period to the next, the Kingdom's migration rate more than doubled from 3.8 percent in 1960 to 7.8 percent in 1970 but then dropped to around 4.5 percent during the five-year period preceding 1980. In addition, the migration rate of some regions drastically turned from negative to positive. 3/

Major changes in migration trends during the past two decades could be summarized as follows:

a) Interregional migration has become increasingly important while the significance of intraregional migration has continued to decline. In 1960, only 42 percent of all interprovincial migrants had moved between regions, whereas 58 percent had moved within region. Between 1965 and 1970, the percent of movement between regions had increased to 46 percent. This changing trend continued into 1980 which, for the first time, the evidence indicates that there was more interregional than intraregional migration. As mentioned above, the migration rates decreased considerably during 1975-1980 compared to 1965 to 1970 but investigating the data in Table 2.2.4 in detail, it is seen that this drop was largely due to a decline in the movement within regions rather than between regions.

3/ Migration is defined as interprovincial movement.

TABLE 2.2.4

INTERPROVINCIAL RECENT MIGRATION BY REGION:
1955-1960, 1965-1970, 1975-1980

Unit: '000

Region of Residence	Migrants Within Region	Migrants Between Region	Total Provincial Migrants
1955-1960			
Northeast	180(87)	26(13)	206(100)
North	91(58)	66(42)	157(100)
South	59(69)	26(31)	85(100)
Central	124(59)	86(41)	210(100)
Bangkok	--	131(100)	131(100)
Whole Kingdom	454(58)	335(42)	789(100)
1965-1970			
Northeast	330(77)	100(23)	430(100)
North	196(62)	120(38)	316(100)
South	131(75)	43(25)	174(100)
Central	248(54)	208(46)	456(100)
Bangkok	--	299(100)	299(100)
Whole Kingdom	905(54)	770(46)	1675(100)
1975-1980			
Northeast	241(77)	74(23)	315(100)
North	166(61)	104(39)	270(100)
South	130(71)	54(29)	184(100)
Central	218(43)	285(57)	503(100)
Bangkok	--	341(100)	341(100)
Whole Kingdom	755(47)	858(53)	1613(100)

Sources: 1955-1960 data from Thailand, National Statistical Office cited in Goldstein and Goldstein (1986), 1965-1970 data from Arnold and Boonpratuang (1976) and 1975-1980 data from Pejaranonda, Goldstein and Goldstein (1984)

b) Concurrently with a decline in intraregional migration, rural-rural migration which usually involves a short movement within the same region also declined when compared to other intersectoral flows (See Table 2.2.5). The shifting importance of migration streams from rural-rural to others might suggest that fewer and fewer opportunities are seen as being made available through movement within rural areas and that urban centres are increasing their attractive of rural residents.

Goldstein and Goldstein (1986) provide other plausible explanations: the degree that rural development efforts have met with some success, the extent that lower fertility in Thailand, particularly in rural areas has lessened population pressure on limited resources, and the increasing importance of international labor migration -- all would contribute to a decline in rural-rural migration.

TABLE 2.2.5

URBAN-RURAL MIGRATION STREAMS: 1965-1970 AND 1975-1980

Migration Streams	1965-1970	1975-1980
	%	%
Rural-rural	62.60	52.00
Rural-to-urban	10.50	14.30
Urban-to-rural	5.40	9.40
Urban-urban	8.90	17.20
Stream unknown	12.60	7.10
Total	100.00	100.00

Sources: 1965-1970 data from Arnold and Boonpratuang (1976) and 1975-1980 data from Pejaranonda, Goldstein and Goldstein (1984).

It should be noted that the proportion of rural-to-urban movement increased from 10.5 percent in 1970 to 14.3 percent in 1980 but the proportions of urban-urban and urban-to-rural migration increased even more. In the next section, attempts are made to investigate the underlying causes of these changes.

c) The Central Region was transformed from a region of net loss in 1955-60 and 1965-70 to one of net gain in 1975-80 while the North Region showed a reversed pattern. (See Table 2.2.6).

Within the Central region, the most noticeable change occured in provinces to the east and provinces adjacent to Bangkok Metropolis. These are provinces which experienced large net in-migration while other provinces in the region still experienced net loss due to interprovincial migration exchange. The apparently wide differences in migration patterns among provinces in the Central region are readily explicable by reference to the normal development process. That is, as these provinces enjoy good access to the employment opportunities and to the facilities of the Bangkok Metropolis and are able to attain a much higher level of development compared to other provinces, their attractiveness to migrants has been much greater than elsewhere.

TABLE 2.2.6

REGIONAL NET GAINS AND LOSSES FROM RECENT MIGRATION: 1955-60, 1965-70 AND 1975-80

Region of current residence	Region of previous residence					Total
	Bangkok	Central	North	Northeast	South	
1955-60						
Bangkok	--	41,208	5,047	17,855	2,935	67,045
Central	-41,208	--	-14,710	15,102	-5,827	-46,643
North	-5,047	14,710	--	21,106	-635	30,134
Northeast	-17,855	-15,102	-21,106	--	-5,746	-59,809
South	-2,935	5,827	635	5,746	--	9,273
1965-70						
Bangkok	--	83,358	21,909	43,221	20,375	168,863
Central	-83,358	--	-10,804	17,290	-3,498	-80,370
North	-21,909	10,804	--	17,790	-345	6,340
Northeast	-43,221	-17,290	-17,790	--	-6,705	-85,006
South	-20,375	3,498	345	6,705	--	-9,727
1975-80						
Bangkok	--	29,042	22,233	99,602	19,523	170,400
Central	-29,042	--	14,981	63,748	-233	49,454
North	-22,233	-14,981	--	23,120	-3,619	-17,713
Northeast	-99,602	-63,748	-23,120	--	-8,345	-194,815
South	-19,523	233	3,619	8,345	--	-7,326

Sources: See Table 2.2.4.

2.2.5 Characteristics of Migrants

The often observed facts that migrants, particularly in developing countries, tend to be young adults and preponderantly dominated by male also hold true for Thailand. During 1975-1980, 74 percent of migrants were under 30 years of age as against 67 percent of the total population. The bias toward a younger

TABLE 2.2.7

AGE DISTRIBUTION OF MIGRANTS BY REGION 1975-1980

unit:percent

Age	Region of 1980 Residence					
	Northeast	North	South	Central	Bangkok Metropolis	Whole Kingdom
under 10	13.82	11.04	10.50	10.87	5.69	10.37
10-19	24.63	23.59	24.86	24.76	34.03	26.51
20-29	35.04	36.79	38.65	35.56	40.39	37.07
30-39	14.14	14.10	14.32	14.62	11.67	13.77
40 and over	12.37	14.47	11.68	14.19	8.22	12.27
Total	100.00	100.00	100.00	100.00	100.00	100.00

Calculated from Pejaranonda, Goldstein and Goldstein (1984), Table 9.

age of migrant seems to be strongest in the Bangkok Metropolis where 80 percent of in-migrants were under 30 years and the age selectivity were the least in the Central and the North regions in which only 71 percent of in-migrants were under 30 years of age. It has also been observed that there was a general tendency for urban to rural migration to become relatively more important with increasing age. This pattern is consistent with the hypothesis that the urban to rural migration stream included many return migrants since older persons would have had more of a chance to migrate from rural to urban areas before returning to rural areas (Arnold and Boonprathuang 1976) .

Although all of the available data between 1960 to 1980 indicated that male migrants outnumbered their female counterparts, these differences have become narrower in all three intercensuses periods. Between 1955-1960, the sex ratio of migrants (that is, the number of male migrant per 100 female migrants) was 131 but by 1970 it had dropped to 115 and was only 109 in 1980. The greater participation of females in interprovincial migration in the the last two decades was accompanied by rapid increase of female participation in the

labor force . This trend of greater female participation in recent migration clearly indicates the closely linked relationship between economic and demographic factors. As the country is approaching the status of a "newly industrialized country", numerous job opportunities have been provided for female workers particularly in the service sector and in the newly established manufacturing sector which is essentially light industry. These affordable opportunities have, in turn, stimulated female migration. This trend has also been observed in other Southeast Asian countries (ESCAP 1982). (See Chapter 3 for detailed discussions of the relationship between female participation in the labor force and demographic factors.)

Data from the 1980 Population and Housing Census clearly indicate that migrants as a group were positively selected. Among people with secondary education and above, migration was more than twice as prevalent as those at lower levels of educational attainment. Beside the fact that upper level schools in Thailand are highly concentrated in urban areas, Pejaranonda, Goldstein and Goldstein (1984) also suggested that positive educational selectivity might be due to the fact people with secondary and university education often learn specialized skills which are demand only in selected locations. In addition, it has been found that the effect of higher education on earning was greater in large urban centres compared to the smaller ones. (Ashakul and Ashakul 1985) Therefore, it might be necessary for educated workers to migrate into more populated areas in order to realize more benefits from their education.

2.2.6 Reasons for Migration

One of the major improvements in the 1980 census is the inclusion of a question concerning reasons for migration of those who moved in the preceding five years to 1980. The results indicate that both destination and gender were important determinants of reasons for moving. (Table 2.2.8)

The data based on this question indicate that economic considerations were an important motivating factor in all migration streams, especially among male migrants who moved to urban areas. Economic reasons were stated by 60.7 percent of male rural-to-urban migrants, overwhelmingly dominating all other reasons. In addition, survey findings indicated that economic motivations were the strongest among in-migrants to the Bangkok Metropolis and its vicinity. About 67 percent of in-migrants to Bangkok during 1981-1983 came to find jobs and to improve their economic status and another 5 percent came for job assignment. (Thailand, National Statistical Office, 1984)

TABLE 2.2.8

PERCENTAGE DISTRIBUTION OF MIGRANTS BY REASONS FOR MOVING

Sex and reason for migrantion	Migration Stream			
	Urban-urban	Rural-urban	Rural-rural	Urban rural
MALES TOTAL	100.0	100.0	100.0	100.0
Economic reasons	41.6	60.7	36.5	44.7
Education	9.7	10.7	3.4	2.9
Family reasons				
To accompany person in household	29.0	14.8	30.3	30.5
Other family-related reasons	14.4	7.5	27.2	19.1
Unknown	5.3	6.3	2.5	2.8
FEMALES TOTAL	100.0	100.0	100.0	100.0
Economic reasons	22.5	43.8	20.2	19.3
Education	12.4	13.5	1.7	3.4
Family reasons				
To accompany person in household	49.3	33.1	59.3	59.6
Other family-related reasons	11.4	6.8	16.5	16.2
Unknown	4.4	2.8	2.3	1.5

Source: Pejaranonda, Goldstein and Goldstein (1984)

Notes: a) Economic reasons include looking for work, job transfer and other job related reasons.

b) Other family related reasons include changing in marital status, returning home, going to other residence and other.

Among female migrants, economic reasons were of lesser importance compared to their male counterparts, except female rural-to-urban migrants, the majority of whom were motivated by the search of work. All other streams of female migration were predominated by family reasons, particularly accompanying a person in the household. About 59 percent of female rural-rural and urban-to-rural migrants stated accompanying a person in household as the reason for migration. Only 19.3 percent and 20.2 percent of female urban-to-rural and rural-rural migrants gave economic reasons. Nevertheless, it is quite likely that the movements of migrants who cited an accompanying member of their household for reason to move were ,in fact, originated by economic reasons. Since large percentage of their spouses might migrate directly in response to economic situations. Had a question concerning reasons for migration of head of household

been included, the magnitude of non-labor force movement due to labor force migration would have been ascertained.

Lastly, it is worth mentioning that "returning home" is one of the specific reason included in family related reasons for migration. It has been observed that almost twice as many urban-to-rural movers were returning home than were rural-rural migrants (Pejaranonda, Goldstien and Goldstien 1984). Quite likely, a considerable part of return home movement reflects the inability of urban areas to provide adequate employment opportunities required by the growth of the labor force. Similar to the nature of problem discussed above, the movement of returning home migrants may partly related to economic reasons since job availabilities may have a significance role in their migration decisions.

2.3 ESTIMATION OF MIGRATION MODEL

As discussed above, migration is closely associated with economic factors, a logical next step would be to integrate migration and population projections into an economic planning model. The main issue that shall be analyzed in this section is " how economic change affects migration ". Findings from this analysis are then used as inputs for demographic forecasts in the next section.

In order to develop meaningful assessments of the impacts of development and development policies on population redistribution, we shall briefly discuss certain complexities.

2.3.1 The Approach

Net migration is difficult to estimate and even more difficult to project, because it represents the difference between in- and out- migration and can take on positive and negative values. The migration data by region in Thailand during 1975 to 1980 indicate that in some specific regions, it may have net in-migration in some age groups but net out-migration in others. A good example is net male migration of the Bangkok Metropolis: the net migration rates were positive for all age groups except for those in the very young and very old age groups. Therfore in making assumptions about future changes in migration streams, we shall work with the actual (gross) interregional flows and an interregional migration matrix shall be constructed.

In addition to the advantage of being able to look at actual in-migration and out-migration seperately, this approach also

allows simultaneous treatment of migration, fertility and mortality and enables diferential patterns of fertility and mortality by region to be considered.

2.3.2 Disaggegation of the Model

In order to analyze the impact of economic factors and government policies on population redistribution, we shall distinguish 4 types of migration streams and the Kingdom shall be subdivided into 9 regions (5 urban regions and 4 rural regions).

The model distinguishes 4 types of migration streams:

1. rural-rural
2. rural-to-urban
3. urban-urban
4. urban-to-rural

This classification is necessary since the movement of each migration stream might be due to different factors. For example, rural to urban movement might be closely tied to differences in the level of regional development whereas rural-rural movement might be due to resettlement of farmers.

The 5 urban and 4 rural regions are:

Urban region

1. Northeast municipal
2. North municipal
3. South municipal
4. Central municipal
5. Bangkok

Rural region

1. Northeast non-municipal
2. North non-municipal
3. South non-municipal
4. Central non-municipal

According to the above specifications, the country's interregional migration shall be described by a 9x9 matrix of region of origin, by region of destination and there would be total possible combinations of 12 rural-rural streams, 20 rural-to-urban streams, 20 urban-urban streams and 20 urban-to-rural streams. (See table 2.3.1) These streams shall be analyzed separately for males and females.

TABLE 2.3.1

POSSIBLE COMBINATIONS OF INTERREGIONAL MIGRATION

ORIGIN	DESTINATION								
	Municipal					Non-municipal			
	Bangkok	Northeast	North	South	Central	Northeast	North	South	Central
Municipal									
Bangkok	-	U-U	U-U	U-U	U-U	U-R	U-R	U-R	U-R
Northeast	U-U	-	U-U	U-U	U-U	U-R	U-R	U-R	U-R
North	U-U	U-U	-	U-U	U-U	U-R	U-R	U-R	U-R
South	U-U	U-U	U-U	-	U-U	U-R	U-R	U-R	U-R
Central	U-U	U-U	U-U	U-U	-	U-R	U-R	U-R	U-R
Non-Municipal									
Northeast	R-U	R-U	R-U	R-U	R-U	-	R-R	R-R	R-R
North	R-U	R-U	R-U	R-U	R-U	R-R	-	R-R	R-R
South	R-U	R-U	R-U	R-U	R-U	R-R	R-R	-	R-R
Central	R-U	R-U	R-U	R-U	R-U	R-R	R-R	R-R	-

Notes: U-U = Urban to urban, U-R = Urban-to-rural, R-R = Rural-rural and R-U = Rural-to-urban

2.3.3 The Migration Model

The migration model used in this study is a "gravity model" with some slight modifications. The gravity framework presumes that aggregate flows of migration from one location to another are directly proportional to the population in the origin and destination, inversely proportional to the distance between regions, and conditional on other attributes of origin and destination. Specifically, the model to be tested is:

$$M_{ij} = K\, D_{ij}^{a1}\, P_i^{a2}\, P_j^{a3}\, W^{a4}\, U^{a5}\, L_i^{a6}\, L_j^{a7} \qquad (1)$$

where M_{ij} = gross migration from area i to area j

D_{ij} = average distance between population in area i and area j

P_i = population of area i

P_j = population of area j

W = relative wage of area i and area j

U	=	relative unemployment of area i and area j 4/
L_i	=	proportion of cultivated land to total cultivable land in area i
L_j	=	proportion of cultivated land to total cultivable land in area j
a1-a7	=	coefficients to be estimated

According to equation (1), factor characteristics of the sending region would include differences in the level of regional development, high unemployment, low wages, population pressure and limited resources such as farmland in the case of rural out-migration.

2.3.4 The Estimation Technique

The full information seemingly unrelated technique was chosen to estimate pooled time series and cross-section data of migration flows from one specific origin to various destinations. The econometrics technique employed is an appropriate technique for estimating gross migration flow from one origin to various destinations since a migration stream from area i to area j might not only be affected by conditions of these two areas but may also be a function of conditions of other areas as well. For example, a wage increase in the Central region is likely to reduce migrants from the Northeast to Bangkok as more of them would choose the Central region as their destination. The details of the technological aspects of the model will be described in a separate paper to be released in early 1988.

2.3.5 The Estimation Results

The migration model specified in section 2.3.3 was estimated by using the data obtained from the 1977 to 1984 Labor Force Survey, Round 2. Interregional migration is measured by the number of people who lived in their present place of residence for less than five years and whose previous place of residence was a different region. 5/ The estimates of the migration equation (1) are presented in Table 2.3.2.

4/ Open unemployment rates in Thailand are quite low particularly in non-municipal areas. These rather low rates of open unemployment might partly be due to the definition adopted in the LFS's. In order to adjust the rate of unemployment to reflect the actual situation, unemployment in this study is defined to include all of the working age population who did not work but were available, together with workers which worked less than 25 hours/week.

5/ See section 2.3.2 for regional classification.

TABLE 2.3.2

THE ESTIMATES OF THE MIGRATION DECISION FUNCTIONS

Type of Flow and Region of Origin	Estimates Coefficients of					R^2
	Distance	Population	Relative wage rate	Relative unemployment rate	Relative proportion of cultivated land to total cultivable area	
MALE						
Rural-to-urban						
Northeast	-1.08	0.21	2.19	-	-	0.94
	(0.57)	(0.31)	(2.24)			
North	-2.17	0.46	1.69	-	-	0.92
	(-4.37)	(1.64)	(5.20)			
South	2.31	1.22	2.98	-	-	0.95
	(0.53)	(1.29)	(2.66)			
Central	-2.09	0.21	2.75	0.12	-	0.47
	(-3.30)	(0.45)	(1.72)	(0.43)		
Urban-to-rural						
Northeast	-0.12	2.59	-	-0.49	-	0.91
	(-0.04)	(0.55)		(-2.52)		
North	-3.33	-1.26	-	-0.83	-	0.91
	(-4.58)	(-1.00)		(-2.14)		
South	-2.39	1.38	0.27	-0.93	-	0.96
	(-2.43)	(0.53)	(0.21)	(-3.45)		
Central	-2.12	-0.54	-0.72	-0.76	-	0.69
	(-7.84)	(-0.75)	(-0.52)	(-2.83)		
Bangkok	-1.28	-0.23	-0.56	-0.52	-	0.56
	(-5.65)	(-0.32)	(-0.56)	(-1.76)		
Rural-rural						
Northeast	-0.22	4.38	3.46	-	-	0.69
	(-0.18)	(1.96)	(2.67)			
North	-2.35	2.27	3.98	-0.01	-	0.96
	(-7.01)	(3.72)	(4.68)	(-0.06)		
South	-1.39	1.27	1.97	-0.25	-	0.99
	(-4.46)	(5.34)	(11.41)	(-5.85)		
Northeast, North, South and Central	-1.01	1.48	3.41	-0.09	2.28	0.99
	(-2.29)	(3.03)	(8.15)	(-1.86)	(2.59)	

Table 2.3.2 (continued)

Type of Flow and Region of Origin	Estimates Coefficients of: Distance	Population	Relative wage rate	Relative unemployment rate	Relative proportion of cultivated land to total cultivable area	R^2
Urban-Urban						
North	-1.33	0.57	1.97	-0.42	-	0.97
	(-3.85)	(2.45)	(1.85)	(-1.95)		
South	-4.45	0.59	0.33	-1.06	-	0.96
	(-0.78)	(0.64)	(0.18)	(-3.57)		
Central	-0.53	0.23	1.60	-	-	0.91
	(-1.12)	(0.36)	(1.34)			
Northeast, North, South and Central	-0.44	0.87	1.83	-0.25	-	0.99
	(-3.58)	(10.40)	(5.31)	(-4.53)		
FEMALE						
Rural-to-urban						
North	5.84	1.77	1.84	-	-	0.97
	(0.78)	(1.77)	(1.68)			
Northeast, North and Central	0.10	1.18	1.44	-0.07	-	1.00
	(7.19)	(93.35)	(735.11)	(-118.65)		
Urban-to-rural						
Central	-1.71	0.32	2.47	-	-	0.97
	(-10.99)	(1.35)	(3.06)			
South	-2.18	-	-	-0.38	-	0.96
	(-2.04)			(-2.62)		
Bangkok	-1.01	0.19	-	-0.58	-	0.93
	(-6.03)	(0.32)		(-1.59)		
Rural-rural						
Northeast	-1.82	0.95	2.36	-	-	0.89
	(-3.95)	(2.05)	(2.04)			
North	3.72	8.52	4.60	-0.57	-	0.89
	(1.97)	(2.77)	(3.59)	(-1.79)		
South	-2.08	0.37	1.76	-0.34	-	0.93
	(-6.00)	(1.52)	(5.87)	(-4.92)		
Northeast, North and South	-1.99	0.64	1.85	-0.12	-	0.84
	(-4.08)	(1.55)	(7.02)	(-1.22)		

Table 2.3.3 (continued)

Type of Flow and Region of Origin	Estimates Coefficients of: Distance	Population	Relative wage rate	Relative unemployment rate	Relative proportion of cultivated land to total cultivable area	R^2
Urban-urban						
Northeast	-0.33	1.08	-	-0.63	-	0.98
	(-0.10)	(5.43)		(-1.49)		
North	-1.21	0.57	1.83	-0.11	-	0.99
	(-4.82)	(3.30)	(2.82)	(-0.47)		
South	-0.77	0.99	1.55	-	-	0.97
	(-1.01)	(5.61)	(3.75)			
Central	-0.93	0.19	0.75	-0.35	-	0.90
	(-2.43)	(0.39)	(1.16)	(-2.39)		
Bangkok	-0.23	1.65	1.01	-	-	0.90
	(-3.58)	(4.61)	(2.45)			

Note: The values of t-statistic are indicated in parentheses below each point estimate.

Examination of Table 2.3.2 suggests the following comments.

First, the model seems to explain a considerable portion of the variance in migrantion indicating that migration is closely tied to changes in economic factors and other explanatory factors namely distance and population. Second, the estimates clearly indicate "pull factor" rather than "push factor" as the underlying influence of rural to urban migration. While rapid increase in urban wage is likely to stimulate fairly large rural to urban migration, deteriorating urban employment appears to have negleglible effect to deter in-migrants from rural areas. This result confirms survey findings that a large percentage of migrants to urban areas come to find jobs and to improve their economic status. 6/ Third, in contrast to rural-to-urban migration, the urban to rural movement seems to be generated by exacerbating urban employment situations. Apparently, a substantial increase in urban unemployment during the late 1970s might be a factor responible for the increase in urban to rural migration and also heavy return migration during the period. Fourth, urban to urban migration seems to be influenced by both push and pull factors. This finding is readily explicable by the fact that costs of being unemployed and the availability of

6/ See section 2.2.6 for detailed discussions on reasons for migration.

information concerning job opportunities in urban areas are much greater than in rural areas. Thus, it is quite natural that both wage incentive and availability of job should be taken into consideration in urban-uaban migration decisions. Fourth, the estimates indicate that farmland scarcity appears to be a factor behind rural-rural migration particularly of male migrants but has discernible impact on rural-to-urban migration. However some caution should be exercised when applying this result. The proportion of cultivated land, a variable which we used in this study, might not be a good indicator to measure the degree of farmland scarcity. In addition, the period under study covering 1977 to 1984 might be too short to assess long term structural change. Fifth, most of the coefficients of distance are negative as expected. This result confirms existing data that interregional migration was predictably high between regions which with long common boundaries. Lastly, the estimates indicate that female migratory behavior is similar to male except that females, in general, seem to respond less to changing conditions compared to their male counterparts. The estimates also indicate that females who resided in the North region tend to respond the most to changing economic conditions.

2.4 THE PROJECTIONS

2.4.1 Four Cases for Migration Projections

In order to help long range planning and establish a better basis for improving coordination of policies for migrants, we have prepared four alternative cases of migration projections. The first is a Base Case. It is important to have a Base Case; this provides a benchmark against which changes in assumption can be measured. The second case relates to depressed agricultural market prices to which the rural economy is linked. The third case relates to the "unemployment problem" which is expected to be a major problem during the next decade particularly of the educated labor force in large urban areas. Finally, we present a fourth case which is based on the premise that decentralization and rural development programs would be met with some success in the upcoming decades. Specifically, the outlines of these four cases are as follows:

1. Base Case

Trends of regional growth, wage and unemployment rates during the 1970s and early 1980s are assumed to extend throughout the period 1985-2005. Wage in Bangkok is assumed to grow the fastest (6.5% per annum) followed by Central (6% per annum), South (5.8% per annum), North (5.6% per annum) and Northeast (5.4 percent per annum). The wage gaps between urban and rural areas are assumed to remain constant. Throughout the projection period, unemployment rates in urban areas are assumed to increase

slightly faster than rural areas and fastest in Bangkok Metropolis where the rate increases from 5 percent in 1985 to 9 percent in 2005. 7/ These assumptions hold true for both males and females.

2. Low Agricultural Price Case

In this case, we hold all assumptions unchanged from the Base Case, except for wages in rural areas. We assume that growth rates of wages in the rural Northeast, North and Central regions will be 2 percent lower and wages in the rural South will be half a percentage point lower compared to the Base Case. By 2005, wages in the Northeast, North and Central regions will drop by 15 percent compared to the Base Case.

3. High Unemployment Rate Case

In this case, we hold all assumptions unchanged from the Base Case, except the unemployment rates in the Bangkok Metropolis which are assumed to reach 14 percent in the year 2005, substantially higher than the rate of 9 percent adopted in the Base Case. This assumption reflects the worsening employment conditions of the educated work force. To isolate the impact, only unemployment rates in Bangkok are assumed to increase.

4. Decentralization Case

In this case, we assumed that the wage differential between Bangkok and all other regions will become narrower compared to the Base Case. The greatest improvement is assumed to occur in the urban Central region while the rural North is assumed to experience the least improvement (see table 2.4.1) .

7/ Definition of unemployment is given in footnote 4.

TABLE 2.4.1

WAGE ASSUMPTIONS:
BASE CASE, LOW AGRICULTURAL PRICE CASE
AND DECENTRALIZATION CASE

	Relative Wage to Bangkok, 2005			% Change compared to the Base Case, 2005	
	Base Case	Low Agricultural Price Case	Decentralization Case	Low Agricultural Price Case	Decentralization Case
Urban					
Northeast	0.59	0.59	0.69	--	16.90 %
North	0.63	0.63	0.72	--	14.30 %
South	0.70	0.70	0.81	--	15.70 %
Central	0.72	0.72	0.86	--	19.40 %
Rural					
Northeast	0.41	0.365	0.48	-12.30 %	15.80 %
North	0.47	0.42	0.53	-11.90 %	11.70 %
South	0.62	0.608	0.70	-2.00 %	12.90 %
Central	0.60	0.53	0.70	-13.20 %	15.80 %

2.4.2 Demographic Assumptions

To demonstrate the impact of changes of economic conditions on population distribution, we then forecast population based on the four cases of migration projections. For the purpose of making meaningful comparisons of our projections with other projections and for future reference, we shall briefly explain the underlying demographic assumptions.

A. Benchmark Data

The projections are based on the 1980 Population Census adjusted to make it compatible with nationally revised population estimates (Pejaranonda, Arnold and Hauser 1983). The correction factors by age and sex for 9 regions are thus applied to the 1980 Population Census to adjust for under-enumeration. The adjusted base population by age and sex by region is detailed in Annex Table A1 to Table A10.

B. Fertility and Mortality Assumptions

The total fertility rates at the municipal and non-municipal levels are based on the figures used by the Population Projection Working Group which projected total and age specific fertility rates at regional levels but did not break down municipal and non-municipal.8/ In order to break down total rates into municipal and non-municipal components, fertility for municipal and non-municipal areas for all regions during the periods 1970-1974 were used to specify mathematical relationships between changes in total fertility rates of each region as a logistic function of time by means of least squares regression.9/ Using figures from the Population Projection Working Group as guidelines, the most appropriate equation is then chosen for each region and extrapolated to provide a projection of total fertility by region- municipal and non-municipal. Similar to the fertility assumption, the mortality assumptions adopted in this study are also consonant with those used nationally. These assumptions are detailed in the Annex to this Chapter.

C. Migration

Gross migration between region in the base year period 1975-1980 is calculated from the 1980 Census. Here too, the published data do not identify municipal and non-municipal separately. Thus the one percent census sample tape was used to calculate proportions of migrants between municipal and non-municipal among all regions. In order to project interregional migration between 1980 to 2005, the estimated coefficients from the migration model are applied to the base period data in order to estimate migration streams under the four alternative cases of assumptions discussed above. For all projections, it was assumed that the age and sex structure of migrants would be identical to that of the base year. The projected net migrants under four alternative cases are presented in Annex Table A11 to Table A14.

2.4.3 The Projection Outcomes and Their Implications

Before presenting the projection outcomes, one important caveat must be underscored. The migration model constructed in this study is designed for simulation exercises, in which the effects of alternative policy measures are compared under a given state of knowledge. In simulation exercise it is the relative behavior of the system under alternative policy regimes that is of importance. The strength of the projections presented in this study is not in forecasting precisely the future time path of concerning variables; it is rather in providing a framework for

8/ Population Projection of Thailand, 1980-2015, Working Group on Population Projection, NESDB, 1986.

9/ Total fertility at municipal and non-municipal levels were estimated from information on the distribution of population from the 1980 census by Rele's method. For further detailed discussion see ESCAP (1984).

policy analysis.

As mentioned above, the population projections were prepared for 9 separate regions, covering the period from 1980 to 2005, and were based on the cohort component method. The results of these projections are shown in Table 2.4.2 to Table 2.4.4. Table 2.4.2 and Table 2.4.3 summarize findings of the Base Case projection. To simplify the presentation, the detailed distribution by age and sex is given in the Annex but omitted in the main text.

TABLE 2.4.2

TOTAL, URBAN AND RURAL POPULATION BY REGION 1980-2005
(AS OF 1ST JULY)
BASE CASE MIGRATION PROJECTION

Persons '000

	1980	1985	1990	1995	2000	2005
Northeast						
Rural	15766	17254	18574	19648	20721	21661
Urban	668	781	890	1005	1123	1242
Total	16434	18035	19464	20653	21844	22903
North						
Rural	8743	9370	9957	10377	10608	10773
Urban	683	806	955	1122	1293	1473
Total	9426	10176	10912	11499	11901	12246
South						
Rural	5167	5801	6547	7299	7896	8497
Urban	710	845	981	1132	1281	1430
Total	5877	6646	7528	8431	9177	9927
Central						
Rural	9116	10025	10807	11442	12113	12752
Urban	997	1150	1315	1485	1668	1863
Total	10113	11175	12122	12927	13781	14615
Bangkok	4870	5693	6445	7150	7853	8579
Whole Kingdom						
Rural	38792	42450	45885	48766	51338	53683
Urban	7928	9275	10586	11894	13218	14587
Total	46720	51724	56471	60660	64555	68269

TABLE 2.4.3

URBAN AND RURAL GROWTH RATES:
1980-85, 1985-90, 1990-95 AND 1995-2005

BASE CASE MIGRATION PROJECTION

Region	Average annual growth rates							
	1980-85		1985-90		1990-95		1995-2005	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Northeast	1.80	3.13	1.47	2.61	1.12	2.42	0.98	2.14
North	1.39	3.32	1.21	3.40	0.83	3.22	0.37	2.76
South	2.31	3.47	2.42	3.00	2.17	2.86	1.53	2.36
Central	1.90	2.85	1.50	2.69	1.14	2.44	1.09	2.29
Bangkok	-	3.12	-	2.48	-	2.07	-	1.84
Whole Kingdom	1.82	3.19	1.57	2.68	1.23	2.36	0.97	2.06

In the Base Case projection, the rural population of Thailand is forecast to increase by 38 percent over the 25 year period, by some 38.8 million in 1980, to about 53.7 million in 2005. The average annual growth rate is calculated at 1.3 percent. This is significantly lower than the rate of increase in the two decades to 1980 which shown an average annual increase of 2.4 percent. The urban population is forecast to increase by 84 percent or at an average annual rate of 2.5 percent per annum during the same period. This projected growth rate is also somewhat low compared to urban growth during the 1960s and 1970s which shows an average increase of around 3.3 and 3.6 percent per annum. 10/ This rather low projected urban growth rate in the next two decades is mainly a result of fertility assumptions. Had the fertility rates been assumed to be at the same level of those in the 1970s, urban population growth in the upcoming decades would have increased at much higher rates than those of the last decade.

10/ The urban growth rate figures during the 1970s and 1980s were adjusted to exclude growth due to areal annexation. Since our study is concerned only with interregional migration, it was necessary that urban growth rates be adjusted to exclude areal annexation before any meaningful comparison could be made.

TABLE 2.4.4

ALTERNATIVE PROJECTIONS OF REGIONAL URBAN AND RURAL POPULATION FOR THE YEAR 2005, THAILAND

Unit: '000

	Poppulation in the year 1980	Population in the year 2005, by migration projection assumption			
		A. Base Case	B. Low Agricultural Price Case	C. High unemployment Case	D. Decentralization Case
Northeast					
Rural	15766	21661	21166	21679	21955
Urban	668	1242	1447	1251	1328
Total	16434	22903	22613	22930	23283
North					
Rural	8743	10773	10586	10788	10704
Urban	683	1473	1619	1483	1557
Total	9426	12246	12205	12271	12261
South					
Rural	5167	8497	8482	8503	8486
Urban	710	1430	1482	1447	1463
Total	5877	9927	9964	9950	9949
Central					
Rural	9116	12752	11909	13922	12798
Urban	997	1863	2161	1923	1979
Total	10113	14615	14070	15845	14777
Bangkok	4870	8579	9046	8383	8037
Whole Kingdom					
Rural	38792	53683	52143	54892	53943
Urban	7928	14587	15755	14487	14364
Total	46720	68269	67898	68377	68306

The impact of changing economic conditions on population distribution can be seen by comparing the three other alternative projections with the Base Case population projection (Table 2.4.4). To gain insights into how different circumstances affect the redistribution of population, we shall now discuss each case separately.

A. Low Agricultural Price Case

In this case, the rural population of Thailand is projected to be some 1.54 million lower compared to the Base Case as a result of an increase in rural-to-urban migration. The largest outflow occurs in rural area of the Northeast region followed by rural areas of the Central region. Urban population is forecasted to increase at an average annual growth rate of 2.8 percent during the projected period. The most striking effects, however, occur in Bangkok where almost 500,000 additional persons will be added.

This finding has a profound implication. It indicates that a slight deterioration of relative rural-urban wages and income are likely to induce a fairly large rural-to-urban migration. Therefore, decentralization policy efforts could be offset by other policies which distort rural and urban income in favor of the latter. An obvious example is agricultural taxation. It is conceivable that without heavy export taxation on agricultural products during the 1960s and 1970s, the Bangkok's population would have been many hundred thousands, if not a million, less than it is nowadays. At present, the Thai Government has reduced export taxes to a small levy due to depressed world market prices. If in the near future demand increases, a relapse to export taxation might not only impinge on agricultural development but would accentuate the problems of rural-urban population balance as well.

Lastly, an increase in rural-to-urban migration is also shown to result in a slight decrease in the Whole Kingdom population. This implies that more urbanbound migration will result in somewhat lower rates of population increase. Actually, these statistics reflect the assumption that migrants from rural areas would adopt the fertility rates of urban areas, which are somewhat lower.

B. High Unemployment Case

In this case, the total population of Bangkok is forecasted to be 8.38 million in the year 2005, a reduction of 196,000 persons compared to the Base Case projection. This reduction is quite small considering that, here, we assume the unemployment rate of Bangkok to be significantly higher than in the Base Case. Examination of the projected interregional migration in detail reveals some useful insights into how migration responds to depressed economic conditions. High unemployment in Bangkok clearly demonstrates its importance as a "push factor" as it induces out-migration from Bangkok to all other regions but it fails to deter in-migration at least as long as income disparities between Bangkok and other regions continue to grow. As a consequence, high unemployment in Bangkok appears to have only marginal effect on net in-migration. This finding coincides with the fact that inspite of Bangkok's substantial urban problems as indicated by -- rapid increase in number of slums,

deteriorating congestion and pollution situations and increasingly shortages of urban facilities and urban services -- it still acts as a strong magnet pulling in people from every part of Thailand.

This finding suggests that a policy to limit growth and employment opportunities in Bangkok by means of intervention in the (informal) labor market, imposition of unjustified rules and regulations and limitation on improvement and/or deferment of the provision of urban services is likely to be a mistaken approach. This policy measure would affect the well-being of Bangkok residents but would not substantially serve the goal of limiting migration.

C. Decentralization Case

These simulation-projection exercises were conducted for the purposes of demonstrating the dynamism of the migration components in population projection and illustrating the effect of implementing policy action on all fronts.

During the period 1980-2005, the Bangkok population is projected in the Decentralization Case to grow by an average 2.0 percent per year. Although these projected growth rates might not appear to be much lower in comparison to rates of increase under the Base Case projection should not deflect from the fact that the Bangkok population to be reduced in the next 20 years under the Decentralization Case is equivalent to subtracting a combined urban population of the next five largest cities in Thailand.

Among all urban areas, the Central region stands to gain the most, in terms of population, from decentralization efforts. Considering the Government regional development plans in the upcoming decade, it is quite likely that the pace of economic development of the Central region would exceed all other regions and so its attractiveness to migrants could be even greater.

As for rural regions, the rural Northeast region, the region which loses the most in interregional migration exchange, stands to gain the most from population redistribution from Bangkok. A word of caution should be repeated here, that these projection outcomes are the result of a certain set of assumptions. They are designed to answer "what if type questions" and their results should not be evaluated in isolation of their underlying assumptions.

TABLE A1 POPULATION PROJECTION : NORTHEAST MUNICIPAL 1980-2005
BASE CASE MIGRATION ASSUMPTION

unit: '000

AGE GROUP	1980	1985	1990	1995	2000	2005
MALES						
0-4	42	46	47	51	55	56
5-9	42	39	43	43	47	51
10-14	42	45	42	46	47	51
15-19	40	53	56	54	58	59
20-24	39	31	44	47	43	48
25-29	29	32	23	36	38	35
30-34	24	46	49	42	55	58
35-39	19	33	55	58	51	65
40-44	15	15	28	50	53	46
45-49	11	12	11	24	45	48
50-54	9	11	11	11	24	44
55-59	7	8	10	11	11	22
60-64	5	5	6	8	8	8
65-69	4	4	4	5	7	7
70-74	2	5	5	5	6	7
75+	2	7	11	13	15	16
TOTAL	334	392	446	502	561	620
FEMALES						
0-4	40	45	45	49	52	53
5-9	40	40	45	45	50	53
10-14	42	42	42	47	47	51
15-19	43	46	45	46	51	52
20-24	38	51	54	54	55	60
25-29	30	44	57	60	61	63
30-34	23	32	47	59	63	64
35-39	18	23	32	46	59	62
40-44	14	14	18	27	40	53
45-49	12	10	9	13	22	35
50-54	9	10	8	7	11	19
55-59	7	9	10	8	7	10
60-64	6	9	11	11	10	9
65-69	4	7	10	11	12	11
70-74	3	5	7	9	11	12
75+	3	5	6	9	13	15
TOTAL	334	389	444	503	562	622
TOTAL M+F	668	781	890	1005	1123	1242
RELATED INDICATORS						
BIRTH RATE	27.0	23.5	22.3	21.1	19.3	
DEATH RATE	6.2	7.0	6.9	7.1	7.1	
RATE OF NAT. INC.	2.08	1.65	1.53	1.40	1.22	
GROWTH RATE	3.13	2.61	2.42	2.23	2.01	
TOTAL FERTILITY	2.861	2.280	2.050	1.980	1.910	
GRR	1.392	1.109	0.997	0.963	0.929	
NRR	1.253	1.002	0.925	0.893	0.867	

TABLE A2 POPULATION PROJECTION : NORTHEAST NON-MUNICIPAL 1980-2005
BASE CASE MIGRATION ASSUMPTION

unit: '000

AGE GROUP	1980	1985	1990	1995	2000	2005
MALES						
0-4	1256	1153	1102	1009	1044	1017
5-9	1264	1221	1126	1080	994	1031
10-14	1152	1247	1205	1112	1068	982
15-19	847	1102	1194	1151	1057	1013
20-24	670	785	1033	1121	1078	985
25-29	571	629	740	983	1071	1029
30-34	487	545	601	711	952	1039
35-39	396	470	528	584	694	931
40-44	323	382	455	512	569	677
45-49	273	308	365	437	494	550
50-54	220	256	290	346	416	471
55-59	170	202	236	269	322	388
60-64	121	149	179	210	241	289
65-69	91	100	125	150	178	205
70-74	52	69	77	96	117	139
75+	49	54	68	80	100	123
TOTAL	7940	8673	9324	9854	10392	10870
FEMALES						
0-4	1214	1124	1071	977	1005	975
5-9	1215	1197	1112	1064	973	1003
10-14	1088	1210	1193	1110	1063	974
15-19	800	1032	1148	1128	1043	993
20-24	670	720	943	1054	1030	941
25-29	561	626	673	892	1000	975
30-34	474	544	609	656	872	979
35-39	391	467	537	602	649	864
40-44	344	386	462	532	596	644
45-49	292	337	379	454	523	587
50-54	231	282	327	368	441	509
55-59	177	218	267	310	350	420
60-64	132	161	199	245	286	324
65-69	101	115	141	175	217	254
70-74	71	81	93	115	144	179
75+	66	80	95	111	135	169
TOTAL	7826	8581	9250	9794	10329	10791
TOTAL M+F	15766	17254	18574	19648	20721	21661
RELATED INDICATORS						
BIRTH RATE	30.1	26.3	22.3	21.6	19.9	
DEATH RATE	8.7	8.1	7.6	7.5	7.6	
RATE OF NAT. INC.	2.14	1.82	1.47	1.41	1.23	
GROWTH RATE	1.80	1.47	1.12	1.06	0.89	
TOTAL FERTILITY	4.181	3.470	2.790	2.540	2.290	
GRR	2.034	1.688	1.357	1.235	1.114	
NRR	1.763	1.485	1.212	1.114	1.015	

TABLE A3 POPULATION PROJECTION : NORTH MUNICIPAL 1980-2005
BASE CASE MIGRATION ASSUMPTION

unit: '000

AGE GROUP	1980	1985	1990	1995	2000	2005
MALES						
0-4	37	44	53	61	62	67
5-9	34	39	46	56	64	65
10-14	38	32	37	44	53	61
15-19	42	33	27	32	38	47
20-24	42	40	32	26	30	37
25-29	33	37	35	26	20	24
30-34	24	45	49	48	41	35
35-39	18	42	64	70	71	65
40-44	17	19	43	65	71	72
45-49	15	18	20	44	65	71
50-54	12	15	17	20	42	63
55-59	9	9	11	14	16	37
60-64	7	9	10	12	14	16
65-69	5	8	10	10	12	14
70-74	3	5	7	9	9	11
75+	3	5	8	10	13	15
TOTAL	338	400	469	545	621	701
FEMALES						
0-4	35	42	51	59	60	64
5-9	33	38	45	55	63	64
10-14	37	36	41	49	59	66
15-19	42	34	32	37	44	54
20-24	41	66	62	62	68	76
25-29	34	64	93	91	91	99
30-34	23	34	63	92	90	91
35-39	18	23	33	62	91	89
40-44	18	14	18	28	57	85
45-49	16	14	10	13	23	51
50-54	13	12	10	5	9	18
55-59	9	12	11	9	5	8
60-64	8	7	10	9	7	3
65-69	6	5	4	6	5	3
70-74	5	3	1	0	2	1
75+	5	4	2	0	0	0
TOTAL	345	407	486	577	672	772
TOTAL M+F	683	806	955	1122	1293	1473
RELATED INDICATORS						
BIRTH RATE	24.8	25.3	24.4	21.2	19.9	
DEATH RATE	7.6	6.6	6.0	5.6	5.4	
RATE OF NAT. INC.	1.72	1.87	1.84	1.57	1.45	
GROWTH RATE	3.32	3.40	3.22	2.84	2.60	
TOTAL FERTILITY	2.290	2.100	1.941	1.720	1.690	
GRR	1.114	1.021	0.944	0.837	0.822	
NRR	0.980	0.937	0.875	0.783	0.774	

TABLE A4 POPULATION PROJECTION : NORTH NON-MUNICIPAL 1980-2005
BASE CASE MIGRATION ASSUMPTION

unit: '000

AGE GROUP	1980	1985	1990	1995	2000	2005
MALES						
0-4	532	524	524	452	371	359
5-9	543	516	510	512	444	365
10-14	580	541	515	510	513	446
15-19	538	561	522	497	491	493
20-24	457	506	528	489	462	456
25-29	375	446	495	518	480	454
30-34	269	362	432	481	503	467
35-39	221	253	343	412	461	483
40-44	213	220	253	342	411	460
45-49	191	211	220	252	340	408
50-54	157	182	202	211	243	328
55-59	118	146	170	190	199	230
60-64	85	104	130	152	170	180
65-69	65	70	87	109	128	145
70-74	41	50	54	67	85	101
75+	42	45	53	60	72	91
TOTAL	4427	4740	5038	5253	5374	5465
FEMALES						
0-4	517	511	509	438	358	345
5-9	522	513	510	510	440	362
10-14	555	523	516	513	513	445
15-19	504	533	499	491	490	489
20-24	440	463	486	451	444	440
25-29	353	413	433	455	421	414
30-34	251	343	402	421	444	411
35-39	213	246	336	395	415	438
40-44	214	213	246	336	394	414
45-49	195	211	212	245	332	390
50-54	158	188	204	205	237	322
55-59	120	150	178	194	195	227
60-64	91	112	140	168	183	185
65-69	71	81	101	126	151	165
70-74	57	59	68	84	105	126
75+	57	71	81	92	111	136
TOTAL	4316	4630	4919	5124	5234	5308
TOTAL M+F	8743	9370	9957	10377	10608	10773
RELATED INDICATORS						
BIRTH RATE		24.9	23.1	18.8	14.8	13.9
DEATH RATE		9.3	9.0	8.6	8.5	8.8
RATE OF NAT. INC.		1.57	1.41	1.02	0.63	0.51
GROWTH RATE		1.39	1.21	0.83	0.44	0.31
TOTAL FERTILITY		2.980	2.750	2.241	1.791	1.730
GRR		1.449	1.338	1.090	0.871	0.841
NRR		1.268	1.182	0.979	0.792	0.773

TABLE A5 POPULATION PROJECTION : SOUTH MUNICIPAL 1980-2005
BASE CASE MIGRATION ASSUMPTION

unit: '000

AGE GROUP	1980	1985	1990	1995	2000	2005
MALES						
0-4	45	56	56	63	62	62
5-9	43	43	54	54	61	60
10-14	42	42	42	53	53	60
15-19	42	45	46	46	57	58
20-24	36	47	51	52	53	64
25-29	32	41	52	57	58	59
30-34	24	37	47	59	63	65
35-39	20	29	42	52	64	69
40-44	18	20	28	42	51	64
45-49	13	16	18	26	39	49
50-54	12	13	17	18	26	39
55-59	8	12	13	17	18	26
60-64	6	8	11	13	16	17
65-69	5	5	6	9	11	13
70-74	3	3	3	4	7	8
75+	3	3	3	3	4	6
TOTAL	353	422	491	568	644	720
FEMALES						
0-4	44	55	55	61	59	60
5-9	41	42	52	52	58	56
10-14	42	40	41	51	51	57
15-19	43	48	48	49	59	60
20-24	40	50	56	56	57	69
25-29	33	45	55	62	62	64
30-34	24	36	48	59	66	66
35-39	20	24	37	48	59	66
40-44	17	19	24	36	47	58
45-49	14	18	20	25	37	48
50-54	11	15	18	21	25	37
55-59	8	10	13	17	19	23
60-64	6	7	8	11	15	17
65-69	5	5	6	7	10	13
70-74	4	4	4	5	6	8
75+	4	5	5	6	6	8
TOTAL	357	423	490	564	637	710
TOTAL M+F	710	845	981	1132	1281	1430
RELATED INDICATORS						
BIRTH RATE	30.3	25.7	24.5	21.0	18.6	
DEATH RATE	6.8	6.0	5.6	5.2	5.1	
RATE OF NAT. INC.	2.36	1.96	1.90	1.58	1.35	
GROWTH RATE	3.47	3.00	2.86	2.47	2.20	
TOTAL FERTILITY	3.401	2.630	2.450	2.145	2.000	
GRR	1.654	1.279	1.192	1.043	0.973	
NRR	1.517	1.189	1.119	0.985	0.925	

TABLE A6 POPULATION PROJECTION : SOUTH NON-MUNICIPAL 1980-2005
BASE CASE MIGRATION ASSUMPTION

unit: '000

AGE GROUP	1980	1985	1990	1995	2000	2005
MALES						
0-4	400	445	510	520	451	461
5-9	385	392	438	503	516	450
10-14	355	381	389	434	500	513
15-19	288	334	359	365	409	474
20-24	215	260	303	326	331	374
25-29	176	206	250	293	316	321
30-34	140	177	207	252	295	318
35-39	125	139	175	206	250	293
40-44	119	126	140	177	208	252
45-49	98	118	126	141	177	208
50-54	86	93	113	120	135	170
55-59	63	79	85	104	112	126
60-64	50	56	70	76	93	101
65-69	39	42	47	60	65	81
70-74	29	29	32	36	46	51
75+	30	32	34	37	42	51
TOTAL	2598	2910	3278	3650	3946	4246
FEMALES						
0-4	385	434	495	503	434	441
5-9	369	380	430	492	501	434
10-14	341	366	377	427	489	498
15-19	280	324	348	359	407	468
20-24	216	263	306	328	338	385
25-29	178	213	259	302	325	335
30-34	140	177	212	258	301	324
35-39	122	137	174	208	255	297
40-44	123	121	136	172	207	253
45-49	99	120	118	133	170	203
50-54	86	95	116	115	129	165
55-59	61	82	91	111	110	125
60-64	52	56	76	85	104	103
65-69	40	46	50	67	75	93
70-74	39	32	37	40	55	62
75+	39	46	44	47	52	65
TOTAL	2569	2891	3269	3649	3950	4251
TOTAL M+F	5167	5801	6547	7299	7896	8497
RELATED INDICATORS						
BIRTH RATE	34.7	35.0	31.5	24.6	23.0	
DEATH RATE	9.7	8.9	7.9	7.1	6.6	
RATE OF NAT. INC.	2.51	2.61	2.36	1.75	1.64	
GROWTH RATE	2.31	2.42	2.17	1.57	1.47	
TOTAL FERTILITY	5.011	4.720	4.150	3.235	2.960	
GRR	2.437	2.296	2.018	1.573	1.440	
NRR	2.142	2.053	1.833	1.440	1.339	

TABLE A7 POPULATION PROJECTION : CENTRAL MUNICIPAL 1980-2005
BASE CASE MIGRATION ASSUMPTION

unit: '000

AGE GROUP	1980	1985	1990	1995	2000	2005
MALES						
0-4	57	59	64	65	69	71
5-9	54	56	59	63	65	69
10-14	57	58	61	63	68	70
15-19	60	67	69	73	77	83
20-24	61	70	78	81	86	91
25-29	49	66	76	85	88	94
30-34	35	53	70	80	90	94
35-39	27	36	54	72	82	91
40-44	24	26	35	53	71	81
45-49	19	27	30	39	58	76
50-54	16	22	31	34	44	62
55-59	12	16	22	31	34	44
60-64	10	11	15	21	29	32
65-69	7	10	11	14	20	28
70-74	5	6	8	9	12	17
75+	5	5	6	9	11	14
TOTAL	498	591	690	793	904	1019
FEMALES						
0-4	55	57	61	63	66	68
5-9	51	53	54	58	60	62
10-14	56	46	46	47	51	49
15-19	58	63	54	55	57	65
20-24	56	70	77	69	72	81
25-29	48	60	74	82	74	80
30-34	34	49	61	76	83	76
35-39	27	32	46	58	72	79
40-44	26	26	31	45	57	71
45-49	21	26	26	31	46	57
50-54	17	22	27	27	32	47
55-59	13	16	21	26	26	31
60-64	11	12	15	19	24	24
65-69	9	10	11	14	18	23
70-74	7	8	9	9	12	16
75+	8	9	11	12	14	17
TOTAL	499	559	625	692	764	844
TOTAL M+F	997	1150	1315	1485	1668	1863
RELATED INDICATORS						
BIRTH RATE	22.3	20.8	18.7	17.4	15.9	
DEATH RATE	4.7	4.4	4.3	4.0	4.0	
RATE OF NAT. INC.	1.76	1.64	1.44	1.34	1.19	
GROWTH RATE	2.85	2.69	2.44	2.32	2.21	
TOTAL FERTILITY	2.510	2.260	2.010	1.950	1.900	
GRR	1.221	1.099	0.978	0.948	0.924	
NRR	1.184	1.073	0.960	0.935	0.914	

TABLE A8 POPULATION PROJECTION : CENTRAL NON-MUNICIPAL 1980-2005
BASE CASE MIGRATION ASSUMPTION

unit: '000

AGE GROUP	1980	1985	1990	1995	2000	2005
MALES						
0-4	594	602	547	483	510	508
5-9	585	580	588	532	469	496
10-14	607	573	566	572	516	452
15-19	530	600	566	560	565	510
20-24	448	529	601	570	564	571
25-29	352	454	538	614	584	581
30-34	266	358	461	548	625	598
35-39	224	262	353	456	543	621
40-44	221	215	251	340	443	530
45-49	180	213	208	244	332	434
50-54	153	171	203	198	234	321
55-59	117	141	158	189	185	221
60-64	94	104	126	142	172	169
65-69	77	81	90	110	126	153
70-74	48	60	64	72	90	104
75+	50	56	68	78	91	111
TOTAL	4545	4999	5390	5708	6049	6378
FEMALES						
0-4	569	582	527	464	487	484
5-9	558	573	590	539	477	503
10-14	583	568	588	610	560	501
15-19	511	569	549	566	586	533
20-24	440	485	534	506	520	535
25-29	364	432	476	523	496	509
30-34	271	365	436	481	529	504
35-39	231	272	368	439	486	535
40-44	230	229	271	367	439	485
45-49	192	226	225	267	362	434
50-54	163	188	222	223	265	359
55-59	126	161	187	222	224	266
60-64	106	121	155	182	217	220
65-69	87	95	109	140	166	199
70-74	69	73	80	93	121	145
75+	73	87	98	111	129	162
TOTAL	4571	5026	5417	5734	6063	6374
TOTAL M+F	9116	10025	10807	11442	12113	12752
RELATED INDICATORS						
BIRTH RATE		25.9	21.4	17.6	17.3	16.3
DEATH RATE		6.6	6.1	5.7	5.6	5.6
RATE OF NAT. INC.		1.93	1.53	1.18	1.18	1.07
GROWTH RATE		1.90	1.50	1.14	1.14	1.03
TOTAL FERTILITY		3.340	2.650	2.100	2.060	1.980
GRR		1.625	1.289	1.021	1.002	0.963
NRR		1.530	1.228	0.982	0.970	0.939

TABLE A9 POPULATION PROJECTION : BANGKOK METROPOLIS 1980-2005
BASE CASE MIGRATION ASSUMPTION

unit: '000

AGE GROUP	1980	1985	1990	1995	2000	2005
MALES						
0-4	268	358	313	283	285	302
5-9	235	266	356	312	283	284
10-14	247	236	267	357	314	285
15-19	300	268	260	294	385	342
20-24	328	339	313	310	345	438
25-29	260	352	367	344	343	379
30-34	186	263	356	372	350	349
35-39	135	183	259	352	368	347
40-44	119	131	178	254	346	363
45-49	89	115	126	173	249	340
50-54	72	85	110	122	168	243
55-59	51	67	80	104	116	162
60-64	42	46	61	73	97	109
65-69	30	36	40	54	65	87
70-74	18	24	29	32	45	55
75+	17	20	26	33	40	53
TOTAL	2397	2787	3141	3469	3797	4138
FEMALES						
0-4	253	345	301	271	271	288
5-9	223	250	342	298	269	269
10-14	247	228	256	348	304	275
15-19	321	286	272	304	398	356
20-24	337	372	344	335	370	465
25-29	272	360	398	373	365	401
30-34	189	277	366	405	381	374
35-39	139	191	279	368	408	384
40-44	125	139	191	280	369	409
45-49	95	124	139	191	279	368
50-54	77	93	122	137	189	276
55-59	56	74	90	118	133	184
60-64	48	53	70	86	113	128
65-69	36	45	49	66	81	108
70-74	27	31	39	44	59	73
75+	28	36	44	56	66	85
TOTAL	2473	2905	3304	3680	4056	4441
TOTAL M+F	4870	5693	6445	7150	7853	8579
RELATED INDICATORS						
BIRTH RATE	27.5	20.8	16.7	15.1	14.6	
DEATH RATE	4.7	4.2	3.9	3.8	3.9	
RATE OF NAT. INC.	2.29	1.66	1.28	1.13	1.07	
GROWTH RATE	3.12	2.48	2.07	1.88	1.77	
TOTAL FERTILITY	2.490	1.880	1.580	1.530	1.530	
GRR	1.211	0.914	0.768	0.744	0.744	
NRR	1.168	0.889	0.752	0.732	0.735	

TABLE A10 POPULATION PROJECTION : WHOLE KINGDOM 1980-2005
BASE CASE MIGRATION ASSUMPTION

unit: '000

AGE GROUP	1980	1985	1990	1995	2000	2005
MALES						
0-4	3231	3287	3215	2989	2909	2904
5-9	3185	3153	3219	3156	2942	2870
10-14	3120	3155	3125	3192	3131	2920
15-19	2687	3065	3100	3071	3138	3079
20-24	2296	2608	2983	3021	2993	3063
25-29	1877	2263	2577	2955	2998	2976
30-34	1455	1886	2273	2593	2974	3024
35-39	1185	1446	1874	2261	2584	2966
40-44	1069	1154	1412	1834	2222	2545
45-49	889	1039	1125	1380	1798	2184
50-54	737	848	995	1081	1332	1741
55-59	555	681	787	928	1013	1255
60-64	420	492	608	706	840	922
65-69	323	356	419	521	612	733
70-74	201	251	279	331	416	493
75+	201	229	278	323	386	481
TOTAL	23430	25912	28267	30343	32289	34157
FEMALES						
0-4	3113	3194	3116	2885	2793	2778
5-9	3053	3086	3181	3113	2890	2805
10-14	2992	3058	3100	3202	3137	2917
15-19	2602	2935	2995	3034	3135	3069
20-24	2278	2540	2861	2915	2954	3054
25-29	1873	2257	2519	2840	2895	2938
30-34	1429	1858	2243	2508	2829	2888
35-39	1179	1414	1842	2227	2493	2812
40-44	1111	1162	1396	1821	2205	2471
45-49	936	1087	1139	1372	1792	2173
50-54	765	905	1055	1109	1338	1752
55-59	577	730	868	1015	1070	1294
60-64	460	538	684	816	958	1013
65-69	359	408	479	613	735	868
70-74	282	296	339	400	515	622
75+	283	343	387	446	526	658
TOTAL	23290	25812	28204	30318	32266	34112
TOTAL M+F	46720	51724	56471	60660	64555	68269
RELATED INDICATORS						
BIRTH RATE		28.3	25.0	21.2	19.1	17.8
DEATH RATE		7.9	7.4	6.9	6.7	6.6
RATE OF NAT. INC.		2.04	1.76	1.43	1.25	1.12
GROWTH RATE		2.04	1.76	1.43	1.24	1.12
TOTAL FERTILITY		3.530	2.980	2.457	2.197	2.074
GRR		1.717	1.449	1.195	1.068	1.009
NRR		1.524	1.298	1.102	1.003	0.952

TABLE A11 BASE CASE MIGRATION PROJECTION: 1980-2005

	1980	1985	1990	1995	2000	2005
NORTHEAST MUNICIPAL						
NET MIGRANTS-MALE	20	20	21	22	23	
NET MIGRANTS-FEMALE	18	20	21	22	24	
NET MIGRATION RATE	10.6	9.7	8.9	8.3	7.9	
NORTHEAST NON-MUNICIPAL						
NET MIGRANTS-MALE	-137	-151	-162	-170	-177	
NET MIGRANTS-FEMALE	-137	-152	-163	-173	-184	
NET MIGRATION RATE	-3.4	-3.4	-3.4	-3.4	-3.4	
NORTH MUNICIPAL						
NET MIGRANTS-MALE	29	31	33	35	37	
NET MIGRANTS-FEMALE	31	37	39	40	42	
NET MIGRATION RATE	16.1	15.4	13.8	12.4	11.4	
NORTH NON-MUNICIPAL						
NET MIGRANTS-MALE	-31	-34	-36	-39	-41	
NET MIGRANTS-FEMALE	-48	-58	-60	-59	-63	
NET MIGRATION RATE	-1.8	-1.9	-1.9	-1.9	-2.0	
SOUTH MUNICIPAL						
NET MIGRANTS-MALE	23	25	27	29	31	
NET MIGRANTS-FEMALE	20	22	24	25	27	
NET MIGRATION RATE	11.2	10.4	9.6	8.9	8.6	
SOUTH NON-MUNICIPAL						
NET MIGRANTS-MALE	-28	-31	-33	-35	-37	
NET MIGRANTS-FEMALE	-23	-25	-28	-30	-31	
NET MIGRATION RATE	-1.9	-1.9	-1.8	-1.8	-1.7	
CENTRAL MUNICIPAL						
NET MIGRANTS-MALE	45	49	53	59	63	
NET MIGRANTS-FEMALE	13	16	17	18	27	
NET MIGRATION RATE	10.9	10.5	10.0	9.8	10.2	
CENTRAL NON-MUNICIPAL						
NET MIGRANTS-MALE	-6	-7	-10	-10	-11	
NET MIGRANTS-FEMALE	-4	-6	-8	-9	-10	
NET MIGRATION RATE	-0.3	-0.3	-0.4	-0.4	-0.4	
BANGKOK						
NET MIGRANTS-MALE	88	101	109	112	116	
NET MIGRANTS-FEMALE	134	150	162	169	173	
NET MIGRATION RATE	8.4	8.3	8.0	7.5	7.0	

TABLE A12 LOW AGRICULTURAL PRICE CASE MIGRATION PROJECTION: 1980-2005

	1980	1985	1990	1995	2000	2005
NORTHEAST MUNICIPAL						
NET MIGRANTS-MALE	24	34	41	45	50	
NET MIGRANTS-FEMALE	23	31	36	39	44	
NET MIGRATION RATE	12.9	15.2	15.2	14.4	13.8	
NORTHEAST NON-MUNICIPAL						
NET MIGRANTS-MALE	-141	-184	-205	-217	-232	
NET MIGRANTS-FEMALE	-149	-177	-197	-212	-228	
NET MIGRATION RATE	-3.5	-4.1	-4.3	-4.3	-4.4	
NORTH MUNICIPAL						
NET MIGRANTS-MALE	31	36	41	45	50	
NET MIGRANTS-FEMALE	34	45	49	52	57	
NET MIGRATION RATE	17.3	18.1	16.7	15.2	14.3	
NORTH NON-MUNICIPAL						
NET MIGRANTS-MALE	-29	-34	-37	-45	-55	
NET MIGRANTS-FEMALE	-54	-70	-75	-79	-90	
NET MIGRATION RATE	-1.9	-2.2	-2.3	-2.4	-2.8	
SOUTH MUNICIPAL						
NET MIGRANTS-MALE	25	30	34	38	40	
NET MIGRANTS-FEMALE	21	24	26	28	31	
NET MIGRATION RATE	11.9	11.7	11.3	10.6	10.1	
SOUTH NON-MUNICIPAL						
NET MIGRANTS-MALE	-29	-33	-38	-41	-42	
NET MIGRANTS-FEMALE	-23	-25	-27	-29	-31	
NET MIGRATION RATE	-2.0	-2.0	-2.0	-1.9	-1.8	
CENTRAL MUNICIPAL						
NET MIGRANTS-MALE	53	68	83	96	106	
NET MIGRANTS-FEMALE	18	28	34	39	51	
NET MIGRATION RATE	13.2	15.3	15.9	15.6	15.6	
CENTRAL NON-MUNICIPAL						
NET MIGRANTS-MALE	-29	-48	-74	-88	-95	
NET MIGRANTS-FEMALE	-9	-25	-37	-43	-50	
NET MIGRATION RATE	-0.8	-1.5	-2.1	-2.3	-2.5	
BANGKOK						
NET MIGRANTS-MALE	100	134	159	171	183	
NET MIGRANTS-FEMALE	142	174	196	209	220	
NET MIGRATION RATE	9.2	10.1	10.2	9.8	9.4	

TABLE A13 HIGH UNEMPLOYMENT CASE MIGRATION PROJECTION: 1980-2005

	1980	1985	1990	1995	2000	2005
NORTHEAST MUNICIPAL						
NET MIGRANTS-MALE	21	22	23	25	26	
NET MIGRANTS-FEMALE	18	20	21	22	24	
NET MIGRATION RATE	10.8	10.0	9.3	8.7	8.4	
NORTHEAST NON-MUNICIPAL						
NET MIGRANTS-MALE	-137	-151	-160	-168	-175	
NET MIGRANTS-FEMALE	-137	-151	-162	-172	-182	
NET MIGRATION RATE	-3.3	-3.4	-3.4	-3.4	-3.4	
NORTH MUNICIPAL						
NET MIGRANTS-MALE	29	32	35	38	41	
NET MIGRANTS-FEMALE	31	37	39	40	42	
NET MIGRATION RATE	16.2	15.7	14.2	12.8	11.9	
NORTH NON-MUNICIPAL						
NET MIGRANTS-MALE	-29	-32	-34	-37	-39	
NET MIGRANTS-FEMALE	-48	-57	-59	-58	-62	
NET MIGRATION RATE	-1.7	-1.9	-1.9	-1.8	-1.9	
SOUTH MUNICIPAL						
NET MIGRANTS-MALE	24	27	30	33	36	
NET MIGRANTS-FEMALE	20	22	24	25	27	
NET MIGRATION RATE	11.5	10.9	10.2	9.6	9.3	
SOUTH NON-MUNICIPAL						
NET MIGRANTS-MALE	-28	-30	-33	-35	-37	
NET MIGRANTS-FEMALE	-23	-25	-27	-29	-31	
NET MIGRATION RATE	-1.9	-1.9	-1.8	-1.7	-1.7	
CENTRAL MUNICIPAL						
NET MIGRANTS-MALE	47	52	59	66	73	
NET MIGRANTS-FEMALE	14	18	20	23	32	
NET MIGRATION RATE	11.4	11.3	11.2	11.1	11.7	
CENTRAL NON-MUNICIPAL						
NET MIGRANTS-MALE	-4	-3	-5	-3	-3	
NET MIGRANTS-FEMALE	-2	-2	-2	0	0	
NET MIGRATION RATE	-0.2	-0.1	-0.2	-0.1	-0.1	
BANGKOK						
NET MIGRANTS-MALE	81	87	89	84	81	
NET MIGRANTS-FEMALE	130	143	151	154	153	
NET MIGRATION RATE	8.0	7.6	7.1	6.4	5.8	

TABLE A14 DECENTRALIZATION CASE MIGRATION PROJECTION: 1980-2005

	1980	1985	1990	1995	2000	2005
NORTHEAST MUNICIPAL						
NET MIGRANTS-MALE	21	25	28	29	32	
NET MIGRANTS-FEMALE	20	24	28	32	36	
NET MIGRATION RATE	11.4	11.6	11.6	11.1	10.8	
NORTHEAST NON-MUNICIPAL						
NET MIGRANTS-MALE	-130	-138	-145	-145	-152	
NET MIGRANTS-FEMALE	-131	-137	-140	-146	-150	
NET MIGRATION RATE	-3.2	-3.1	-3.0	-2.9	-2.8	
NORTH MUNICIPAL						
NET MIGRANTS-MALE	30	34	36	38	40	
NET MIGRANTS-FEMALE	32	42	46	48	52	
NET MIGRATION RATE	16.7	17.0	15.6	13.8	12.7	
NORTH NON-MUNICIPAL						
NET MIGRANTS-MALE	-29	-36	-43	-52	-51	
NET MIGRANTS-FEMALE	-49	-61	-64	-63	-67	
NET MIGRATION RATE	-1.8	-2.0	-2.2	-2.2	-2.3	
SOUTH MUNICIPAL						
NET MIGRANTS-MALE	24	27	31	32	35	
NET MIGRANTS-FEMALE	21	23	26	28	31	
NET MIGRATION RATE	11.7	11.1	10.6	9.8	9.5	
SOUTH NON-MUNICIPAL						
NET MIGRANTS-MALE	-28	-31	-35	-36	-39	
NET MIGRANTS-FEMALE	-23	-26	-28	-30	-32	
NET MIGRATION RATE	-2.0	-1.9	-1.9	-1.8	-1.8	
CENTRAL MUNICIPAL						
NET MIGRANTS-MALE	58	57	63	74	81	
NET MIGRANTS-FEMALE	15	19	23	25	35	
NET MIGRATION RATE	13.4	12.2	12.0	12.1	12.4	
CENTRAL NON-MUNICIPAL						
NET MIGRANTS-MALE	-10	5	15	16	14	
NET MIGRANTS-FEMALE	-5	-8	-10	-10	-11	
NET MIGRATION RATE	-0.3	-0.1	0.1	0.1	0.0	
BANGKOK						
NET MIGRANTS-MALE	68	61	53	46	43	
NET MIGRANTS-FEMALE	124	127	124	120	112	
NET MIGRATION RATE	7.3	6.3	5.3	4.6	4.0	

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CHAPTER 3

LABOUR FORCE GROWTH

Over the last 15 years, the rate of population growth has declined from over 3% per annum to around 1.7% at present. Over the next 2 decades, the rate of population growth is expected to decline further, as economic development and the spread of education can be expected to lead to a smaller average desired family size among newly married women, and the efforts of the National Family Planning Program should contribute to further declines in fertility rates. Over all, it is expected that the rate of population growth should decline to around 1.1% by the year 2005. The immediate question relevant to the employment issue is what will happen to the supply of labour. Clearly, this depends crucially on the rate of population growth with some lag, and one may expect that the past and expected future decline in the rate of population growth will eventually lead to a slow down in the growth rate of the labour force. This will help in alleviating the pressure on the absorptive capacity of the labour market.

Population growth is however just one determinant of the supply of labour, the other is the rate of labour force participation, which generally varies with age, sex, education, location, and a whole host of economic and non-economic factors. In fact, the relationships between population, labour supply and labour market conditions are highly complex, and are essentially determined simultaneously. For example, labour force participation will depend on labour market conditions, as well as the structure of population and other factors; labour market conditions also depend on the relationships between the supply and demand for labour; at the same time, labour market conditions at various locations will influence the flow of migrants, which in turn partly determines the locational structure of the population.

An econometric analysis which takes account of the full simultaneous linkages between the various demographic and economic variables faces many difficulties, particularly given the limited nature of time series data available. However, a first cut into the problem, and a fairly crude one, was carried out to estimate a macro labour force participating function depending on simple economic and demographic variables in order to get some rough estimates of the expected labour force growth in the future. The data used was taken from the 1977-1984

July-September rounds of the Labour Force Surveys. We put together a cross-section time series aggregated data on population, labour force, employment, unemployment, schooling, and various other economic indicators broken down by sex, region, and municipal-non-municipal. Labour force participation rates (expressed in logit form) were then estimated using a pooled cross-section time series model. The main aim was to explain the variation in labour force participation using simple indicators of demographic and economic factors. (For a prior attempt at estimating labour force participation rates using similar data, but with more breakdowns by age and education see "NESDB: Labour Supply Projection, 1986-1996", October 1986. Unfortunately, in that study, much of the variation was simply explained by a time trend, which is not very satisfactory for projections over the very long run.)

Labour force participation for men was not estimated, because an inspection of the data revealed that the rates did not vary much over time, at around 98-99% of the working age population excluding those still at school in the North, North-east and the South, about 96% in the Central region and 95% in Bangkok. For women, separate estimates were made for urban and rural areas (see the technical annex at the end of this chapter). After some experimentations, it turned out that the variables that could best explain the labour force participation rates of women were (i) the rates of unemployment and underemployment, (ii) the ratio of children of both sexes below 11 to female potential participants, which shall be referred to as the child-dependency ratio, and for the municipal area (iv) the share of government employment to total employment. Wages were not used, as one might with individual level data, because they are simultaneously determined along with employment. Their introduction within a simultaneous estimation framework is left for the future.

The results are fairly satisfactory and intuitively plausible. A higher rate of unemployment and under-employment leads to lower participation rates, signifying that women are responsive to labour market conditions. A lower child-dependency ratio leads to more participation, because presumably of less need to look after the children for the average woman. In the municipal areas, the share of government employment in total employment is positive, indicating that relatively more government employment leads to more female participation. This may signify the attractiveness of government employment, with generally higher wages than in the private sector except at the university level, and is certainly related to the demand for labour particularly for the better educated workers, given the government's important role in employing these workers.

The results concerning dependency ratios and government employment are quite interesting as far as their implications on future labour supply is concerned. First, dependency ratios are projected to decrease by a lot over the next two decades as a result of the past and continuing decline in fertility rates. Thus, other things equal, this will tend to lead to higher participation of women in the work force. On the other hand, with the 2% ceiling on government employment, its share in total employment is likely to decline in the urban areas, and this tends to reduce participation.

Using these results, a projection of labour force growth was then made using the base case population projection in Chapter 2. A number of things should be noted. First, assumptions have to be made concerning the trends of the independent variables; unemployment and underemployment rates, dependency ratios, and the share of government employment. In actual fact, these should all be derived simultaneously within a full economic-demographic model, but we are still some way off

TABLE 3.1
PROJECTED WORK FORCE GROWTH 1985-2005
WHOLE KINGDOM, BOTH SEXES

	POTENTIAL WORKFORCE	WORKFORCE	GROWTH POTENTIAL WORKFORCE	GROWTH WORKFORCE	PARTICIPATION RATE
1984		26473897			
1985	29952440	27200394			90.81%
1990	34254924	31157133	2.72%	2.75%	90.96%
1995	38388048	35049199	2.30%	2.38%	91.30%
2000	42287023	38682938	1.95%	1.99%	91.48%
2005	45702633	41804893	1.57%	1.56%	91.47%

NOTE: Figures adjusted to be consistent with
1984 Labour Force Survey Figures.
Potential work force is non-school population
between 11 and 65.

from having a satisfactory structure of this nature. Here, the demographic variables were taken from the population projections, unemployment and underemployment rates were assumed to increase from current levels by 1-2 percentage points during the period of the Sixth Plan, and then stabilize there after, and the share of

government employment was calculated by assuming that the growth of government employment would be 2% per annum during the projection period. Assumptions were also made on enrollments of children over 11 years old, as along with the demographic projections on population between 11 an 65, this is needed to determine the potential labour force. In actual fact, for those at school age, schooling decisions are clearly related to labour force participation decisions, but a simplification was made to treat this exogenously. Generally, it was assumed that the ratio of the relevant age groups at school would increase by around 10% to 15% over the next 10 years and then stabilize. If the government should increase the compulsory school leaving age, then this will have to be adjusted upwards.

The results in Table 3.1 shows that the total growth in the labour force will still be fairly high up until the end of the Seventh Plan. (For details broken down by sex and region, see the Statistical Annex at the end of this Chapter) The rate will average 2.75% between 1985 and 1990, and 2.38% between 1990 and 1995. It is expected to fall below 2% between 1995 and the year 2000. From the table it is clear that the trend in labour force growth follows closely that of the growth of potential labour force, which is here taken to mean population between 11 and 65 not at school. The rate of labour force participation increases slightly, but only by 0.66% in twenty years.

In terms of the 5-year Plan period, the net additions to the labour force shows a decreasing trend. In the period of the Sixth Plan, the labour force is expected to increase by 3,957,357 persons. This will decline to 3,859,635 persons in the seventh Plan, and 3,547,332 during the period of the eight Plan.

TABLE 3.2
INCREASE IN WORK FORCE
6TH, 7TH AND 8TH PLAN PERIODS

	6TH	7TH	8TH
NON-MUNI	3,113,321	2,905,962	2,614,304
BANGKOK	519,422	601,299	577,586
OTH-MUNI	324,614	352,374	355,442
TOTAL	3,957,357	3,859,635	3,547,332

The pattern is different for municipal areas and non-municipal areas, and between Bangkok and other municipal areas. In the non-municipal areas, the net increase in the labour forces declines through out the three 5-year plans. For Bangkok, the net increase is higher during the seventh Plan compared to the sixth Plan, but then declines in the eight Plan. On the other hand, for non-Bangkok municipal areas, the additions to the labour force increases through out.

In terms of regional distribution, the North shows the lowest growth rates, 2.0% between 1985 and 1990, and falling to 1.1% between 2000 and 2005. This is however due to low growth in the non-municipal areas, with a net loss from out-migration. Municipal areas in the North in fact show the highest rate of labour force growth with in-migration from the non-municipal areas contributing substantially. The North-east and the Central regions have similar labour force growth over the next 10 years, about 2.8-2.9% between 1985-1990 and 2.3-2.4% between 1990-1995. However, if heavy investments in the Eastern Sea Board area should succeed in attracting labour intensive industries, then there may be larger migration into the region and faster labour force growth. The South has slightly higher rates than the other regions (excluding Bangkok), because this is the region where the population growth rate is still relatively high, and the highest compared to the other regions. Bangkok has the highest growth in labour force, among the various regions. However, when compared to only municipal areas in the other regions it has the lowest rate.

A clear pattern that stands out from the labour force projections is the difference between the municipal areas and the non-municipal areas. The labour force in the former is expected to grow much faster than the latter, with the growth rate of municipal work force greater than 3.5% through out the next decade, while in non-municipal areas, the rate is 2.6% per annum between 1985 and 1990, and 2.16% between 1990 and 1995.

Part of the reason for the faster growth in municipal areas is that female labour force participation is expected to increase faster in the municipal area compared to the non-municipal areas. In the municipal areas, the female labour force participation rate is expected to increase from 69.42% in 1985 to 74.25% in 2005. This compares with the much lower increase in non-municipal areas, from 87.07% in 1985 to 88.18% in the year 2005.

TABLE 3.3
PROJECTED WORK FORCE GROWTH 1985-2005
BY MUNICIPAL AND NON-MUNICIPAL AREAS

TOTAL MUNI BOTH SEXES	POTENTIAL WORKFORCE	WORKFORCE	GROWTH POTENTIAL WORKFORCE	GROWTH WORKFORCE	PARTICIPATION RATE
1985	5142260	4207974			81.83%
1990	6111872	5015627	3.52%	3.57%	82.06%
1995	7171430	5963950	3.25%	3.52%	83.16%
2000	8229583	6909219	2.79%	2.99%	83.96%
2005	9212649	7767252	2.28%	2.37%	84.31%
TOTAL NON-MUNI BOTH SEXES					
1985	24810180	22992420			92.67%
1990	28143052	26141506	2.55%	2.60%	92.89%
1995	31216618	29085248	2.09%	2.16%	93.17%
2000	34057440	31773718	1.76%	1.78%	93.29%
2005	36489985	34037642	1.39%	1.39%	93.28%

The main influence on the increase in participation rates is the expected rapid decline in the child-dependency ratio over the next two decades brought about by the current low level of fertility rates and the continuing declining trend. Currently, the child-dependency ratio is around .94, and this is expected to decline to .55 by the year 2005. This decline occurs at about the same pace in municipal and non-municipal areas, in the former it decreases from .935 in 1985 to .565 in 2005, while in non-municipal areas it declines from .939 in 1985 to .551 . However, female labour force participation appears to be more responsive to a change in the child-dependency ratio in the municipal area, as borne out by a higher absolute value for the coefficient for this variable in the estimation. The reason is probably that female participation rates are already quite high in the non-municipal areas, particularly in the North and North-east, where the rates are around 90%.

Changes in female participation rates appears to be less important in explaining the variation in labour force growth between municipal and non-municipal areas, when compared to the effect of the rate of growth of potential labour force. In terms of total labour force participation, Table 3.3 shows that it only increases by 2.5 percentage points in 20 years in the municipal

areas, and by .6% in 20 years in non-municipal areas. Male participation rates are assumed to remain the same (and does not seem to have change much in the recent past), and this has a dampening effect on the change in the overall participation rate. Table 3.3 also shows that the rate of growth in the labour force follows the rate of growth in the potential labour force quite closely.

The main reason for the relatively fast growth in the potential labour force in the municipal areas is migration. The natural rates of increase of population in municipal areas are already very low, and migration adds around one percentage point to population growth in the municipal areas per year. Because of this, labour force growth projections will be rather sensitive to the rates of migration. This demonstrates clearly the inter-linkage between demographic and economic analysis. The population projections, from which these labour force projections were derived, depended upon an economic analysis of migration behaviours. Labour force growth in different regions and areas will in turn influence the labour market conditions in the various areas, which is one force which will govern the cause of migration, and hence population distribution. Thus, the projections presented here should be regarded as only a first approximation. They should however give a rough picture of what may be expected in the future. A crucial development that will determine the actual pattern of growth is the ability of the various areas to generate enough employment, and real income growth for the labour force. If not, then it becomes less attractive compared to other areas, and the pattern of migration and the distribution of population will change accordingly as clearly demonstrated in the last chapter. In the next two chapters, the issue of employment absorption will be examined in detailed.

TECHNICAL ANNEX TO CHAPTER 3

ESTIMATING LABOUR FORCE PARTICIPATION

A pooled cross-section time series analysis was carried out to estimate female labour force participation rates using data derived from the 1977-1984 Labour Force Surveys. Only data from the July-September rounds were used to avoid problems concerning seasonality. The Labour Force Survey data were used to derive population, labour force, employment, unemployment and under employment, as well as a number of other indicators, broken down

into region, area, sex, and year. A pooled cross-section time-series model with cross-sectional heteroscedasticity and time-wise autoregressiveness was used.

In general, the data in the Labour Force Surveys are fairly noisy, even at this level of aggregation, particularly as the weights used in each survey depends on extrapolations of population trends in the intervening years between the various censuses. Thus, population figures can show rather unrealistic year to year movement. However, with labour force participation, which is a ratio of various populations, the rates appear to be less noisy. The estimations were only carried out for females, as males rates do not appear to change much over time, and are generally almost 100% of the potential work force (excluding those still at school).

The dependent variable is the logit of the ratio of labour force (employment+underemployment+unemployment) to the potential work force (population between 11 and 65 not at school). If p is the participation rate, then the dependent variable used is log(p/(1-p)). For participation rates between 0 and 1, the range of this variable is minus infinity to plus infinity. This avoids problems associated with inconsistency between the assumption of normal random errors (which can range from plus infinity to minus infinity), and a dependent variable which has to lie within a certain limit, and makes sure that the predicted value of labour force participation rate from the estimation will always lie between 0 and 1.

A number of variables were experimented with, and it turns out that the best variables were the dependency ratio, the rate of unemployment and under employment, and for the municipal area, the share of government in total employment. A time trend was avoided, as this is somewhat unsatisfactory for very long term projections (as here), and in any case it turns out that with the above mentioned variable, the addition of a time trend was not significant. The final list of variables and the results are presented in the tables below.

LIST OF VARIABLES
LABOUR FORCE PARTICIPATION ESTIMATION

RUN	=	THE RATE OF UNEMPLOYMENT+UNDER EMPLOYMENT LABOUR FORCE
RDEP	=	THE RATIO OF CHILDREN UNDER 11 TO POTENTIA LABOUR FORCE (POPULATION 11-65 YEARS OLD N AT SCHOOL)
SGOVEM	=	SHARE OF GOVERNMENT EMPLOYMENT TO TOTAL EMPLOYMENT
REG4	=	DUMMY FOR CENTRAL REGION
REG5	=	DUMMY FOR BANGKOK

FEMALE LABOUR FORCE PARTICIPATION
RESULTS FOR MUNICIPAL AREAS

VARIABLE NAME	ESTIMATED COEFFICIENT	T-RATIO 35 DF
SGOVEM	2.7043	1.8694
RUN	-1.3031	-1.0488
RDEP	-0.68074	-1.7777
REG5	-0.42463	-2.4440
CONSTANT	1.5315	2.8062

LOG-LIKELIHOOD FUNCTION = 25.9695
BUSE R-SQUARE = 0.4636
BUSE RAW-MOMENT R-SQUARE = 0.9701

FEMALE LABOUR FORCE PARTICIPATION
RESULTS FOR NON-MUNICIPAL AREA

VARIABLE NAME	ESTIMATED COEFFICIENT	T-RATIO 28 DF
RUN	-5.1889	-3.4587
RDEP	-0.38935	-1.4362
REG4	-0.31505	-3.0763
CONSTANT	2.8406	7.3033

LOG-LIKELIHOOD FUNCTION = -1.44744
BUSE R-SQUARE = 0.5211
BUSE RAW-MOMENT R-SQUARE = 0.9907

STATISTICAL ANNEX TO CHAPTER 3

TABLE 3.4

LABOUR FORCE PROJECTIONS FOR NORTH AND NORTH-EAST

NORTH MUNI BOTH SEXES	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	415721	360396			86.69%
1990	523273	450812	4.71%	4.58%	86.15%
1995	629525	540608	3.77%	3.70%	85.88%
2000	738915	634847	3.26%	3.27%	85.92%
2005	864498	744665	3.19%	3.24%	86.14%

NORTH NON-MUNI BOTH SEXES	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	5878021	5574974			94.84%
1990	6457228	6113301	1.90%	1.86%	94.67%
1995	6941369	6599087	1.46%	1.54%	95.07%
2000	7365467	7011838	1.19%	1.22%	95.20%
2005	7698684	7330723	.89%	.89%	95.22%

NORTH BOTH AREAS FEMALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	3116145	2784538			89.36%
1990	3445464	3059183	2.03%	1.90%	88.79%
1995	3732540	3334363	1.61%	1.74%	89.33%
2000	3997530	3575473	1.38%	1.41%	89.44%
2005	4224950	3775211	1.11%	1.09%	89.36%

NORTH BOTH AREAS MALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	3177597	3150832			99.16%
1990	3535036	3504930	2.15%	2.15%	99.15%
1995	3838354	3805332	1.66%	1.66%	99.14%
2000	4106852	4071212	1.36%	1.36%	99.13%
2005	4338232	4300177	1.10%	1.10%	99.12%

NORTH-EAST MUNI BOTH SEXES	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	339235	293431			86.50%
1990	403683	351141	3.54%	3.66%	86.98%
1995	478798	419528	3.47%	3.62%	87.62%
2000	557850	491079	3.10%	3.20%	88.03%
2005	635874	561584	2.65%	2.72%	88.32%

NORTH-EAST NON-MUNI BOTH SEXES	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	10250815	9584251			93.50%
1990	11784057	11037225	2.83%	2.86%	93.66%
1995	13163519	12363480	2.24%	2.30%	93.92%
2000	14337461	13474956	1.72%	1.74%	93.98%
2005	15249249	14326390	1.24%	1.23%	93.95%

NORTH-EAST BOTH AREAS FEMALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	5420006	4769241			87.99%
1990	6229892	5501620	2.82%	2.90%	88.31%
1995	6969163	6189783	2.27%	2.39%	88.82%
2000	7597289	6755829	1.74%	1.77%	88.92%
2005	8086845	7183898	1.26%	1.24%	88.83%

NORTH-EAST BOTH AREAS MALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	5170044	5108440			98.81%
1990	5957848	5886746	2.88%	2.88%	98.81%
1995	6673153	6593225	2.29%	2.29%	98.80%
2000	7298022	7210207	1.81%	1.81%	98.80%
2005	7798279	7704076	1.33%	1.33%	98.79%

NOTE: POP1165 is the number of non-school population between 11 and 65

TABLE 3.5

LABOUR FORCE PROJECTIONS FOR SOUTH AND CENTRAL

SOUTH MUNI BOTH SEXES	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	386827	323970			83.75%
1990	472596	397436	4.09%	4.17%	84.10%
1995	568951	482612	3.78%	3.96%	84.82%
2000	669942	572879	3.32%	3.49%	85.51%
2005	770889	664287	2.85%	3.01%	86.17%

SOUTH NON-MUNI BOTH SEXES	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	3012739	2796388			92.82%
1990	3474044	3232124	2.89%	2.94%	93.04%
1995	3945377	3677055	2.58%	2.61%	93.20%
2000	4474594	4195483	2.55%	2.67%	93.76%
2005	5062526	4767936	2.50%	2.59%	94.18%

SOUTH BOTH AREAS FEMALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	1668259	1415878			84.87%
1990	1935425	1649896	3.02%	3.11%	85.25%
1995	2214292	1896086	2.73%	2.82%	85.63%
2000	2522581	2188305	2.64%	2.91%	86.75%
2005	2856730	2503266	2.52%	2.73%	87.63%

SOUTH BOTH AREAS MALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	1731307	1704480			98.45%
1990	2011215	1979664	3.04%	3.04%	98.43%
1995	2300036	2263581	2.72%	2.72%	98.42%
2000	2621956	2580058	2.65%	2.65%	98.40%
2005	2976685	2928957	2.57%	2.57%	98.40%

CENTRAL MUNI BOTH SEXES	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	560523	475639			84.86%
1990	666122	568554	3.51%	3.63%	85.35%
1995	790133	678582	3.47%	3.60%	85.88%
2000	896305	774399	2.55%	2.68%	86.40%
2005	1000784	868822	2.23%	2.33%	86.81%

CENTRAL NON-MUNI BOTH SEXES	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	5668605	5036808			88.85%
1990	6427724	5758857	2.55%	2.72%	89.59%
1995	7166353	6445627	2.20%	2.28%	89.94%
2000	7879918	7091441	1.92%	1.93%	89.99%
2005	8479526	7612592	1.48%	1.43%	89.78%

CENTRAL BOTH AREAS FEMALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	3138756	2540302			80.93%
1990	3511869	2882557	2.27%	2.56%	82.08%
1995	3902489	3225529	2.13%	2.27%	82.65%
2000	4277876	3539940	1.85%	1.88%	82.75%
2005	4595127	3783610	1.44%	1.34%	82.34%

CENTRAL BOTH AREAS MALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	3090373	2972144			96.17%
1990	3581977	3444853	3.00%	3.00%	96.17%
1995	4053997	3898679	2.51%	2.51%	96.17%
2000	4498347	4325900	2.10%	2.10%	96.17%
2005	4885183	4697804	1.66%	1.66%	96.16%

TABLE 3.5

LABOUR FORCE PROJECTIONS FOR BANGKOK AND WHOLE KINGDOM

BANGKOK MUNI FEMALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	1795470	1201839			66.94%
1990	2119416	1428443	3.37%	3.51%	67.40%
1995	2474282	1737328	3.14%	3.99%	70.22%
2000	2827946	2039080	2.71%	3.25%	72.10%
2005	3131554	2275629	2.06%	2.22%	72.67%

BANGKOK MUNI MALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	1644484	1552699			94.42%
1990	1926782	1819241	3.22%	3.22%	94.42%
1995	2229742	2105292	2.96%	2.96%	94.42%
2000	2538625	2396935	2.63%	2.63%	94.42%
2005	2809049	2652266	2.05%	2.05%	94.42%

TOTAL MUNI FEMALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	2660039	1846725			69.42%
1990	3164177	2211027	3.53%	3.67%	69.88%
1995	3721972	2681473	3.30%	3.93%	72.04%
2000	4270020	3140949	2.79%	3.21%	73.56%
2005	4785860	3553661	2.31%	2.50%	74.25%

TOTAL MUNI MALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	2482221	2361248			95.13%
1990	2947695	2804600	3.50%	3.50%	95.15%
1995	3449458	3282478	3.19%	3.20%	95.16%
2000	3959564	3768271	2.80%	2.80%	95.17%
2005	4426789	4213591	2.26%	2.26%	95.18%

TOTAL NON-MUNI FEMALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	12478596	10865074			87.07%
1990	14077889	12310672	2.44%	2.53%	87.45%
1995	15570794	13701618	2.04%	2.16%	88.00%
2000	16953202	14957677	1.72%	1.77%	88.23%
2005	18109346	15967953	1.33%	1.32%	88.18%

TOTAL NON-MUNI MALE	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	12331584	12127346			98.34%
1990	14065164	13830834	2.67%	2.66%	98.33%
1995	15645824	15383631	2.15%	2.15%	98.32%
2000	17104238	16816041	1.80%	1.80%	98.32%
2005	18380639	18069688	1.45%	1.45%	98.31%

TOTAL BOTH AREAS FEMALES	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	15138635	12711800			83.97%
1990	17242066	14521700	2.64%	2.70%	84.22%
1995	19292766	16383090	2.27%	2.44%	84.92%
2000	21223222	18098626	1.93%	2.01%	85.28%
2005	22895206	19521614	1.53%	1.53%	85.27%

TOTAL BOTH AREAS MALES	POP1165	WKF	GROWTH POP1165	GROWTH WKF	PARTIC
1985	14813805	14488595			97.80%
1990	17012858	16635434	2.81%	2.80%	97.78%
1995	19095282	18666109	2.34%	2.33%	97.75%
2000	21063802	20584312	1.98%	1.98%	97.72%
2005	22807428	22283279	1.60%	1.60%	97.70%

TABLE 3.6
CHILD DEPENDENCY RATIO
(RATIO OF CHILDREN UNDER 11 TO POTENTIAL WORK FORCE)

	NORTH MUNI	NORTH NON-MUNI	NORTH-EAST MUNI	NORTH-EAST NON-MUNI
1985	.887	.849	1.274	.995
1990	.833	.771	1.119	.811
1995	.805	.674	1.002	.680
2000	.732	.548	.933	.608
2005	.649	.460	.859	.568

	SOUTH MUNI	SOUTH NON-MUNI	CENTRAL MUNI	CENTRAL NON-MUNI
1985	1.161	1.114	.932	.839
1990	1.056	1.081	.851	.731
1995	.943	1.031	.759	.601
2000	.831	.872	.713	.524
2005	.735	.725	.665	.495

	BANGKOK MUNI	TOTAL MUNI	TOTAL NON-MUNI	GRAND TOTAL
1985	.884	.935	.939	.938
1990	.812	.856	.817	.824
1995	.641	.715	.704	.706
2000	.521	.611	.610	.610
2005	.486	.565	.551	.554

CHAPTER 4

AGRICULTURAL EMPLOYMENT

AND

SEASONAL VARIATIONS IN LABOUR DEMAND

4.1 INTRODUCTION

From the previous chapters, it can be seen that labour force growth over the next two 5-year Plan periods will continue to be at a fairly high level. In municipal areas, the rate of growth is expected to be over 3.5% in both the Sixth and Seventh Plan. In rural areas, where most people have their livelihood in agriculture, the rate will be around 2.6% between 1985-1990, and then should slow down to around 2.2% between 1990-1995. The slow down towards the end of the Sixth Plan and the beginning of the Seventh Plan should help ease the burden on labour absorption. However, the question of rural labour absorption during the period of the Sixth Plan is a worrying one. With the bleak outlook on the prices of major crops, the question is what will happen to the demand for labour in agriculture, and how will the rural population be able to adjust to the situation. This chapter focuses on agriculture employment with two main goals:-

1. To analyze the outlook for agricultural labour demand over the period of the Sixth Plan, with special emphasis on the seasonal variation in the demand for labour.

2. To study the way that rural labour adjusts to the sharp fall in demand for labour during the dry season months, when agricultural labour demand declines by around 5 to 6 million people.

In terms of human resource management, the analysis should help in identifying and quantifying key problem areas, which affects the majority of the working population. How will farmers responds to the outlook on crop prices? What is the extent to which they can shift among different crops as relative price changes, taking advantage of the crops with good price outlook, and how will this affect the demand for labour through out the

year? How does the rural population cope with the drastic decline in labour demand in the dry season? Is the observed 4-5 million people inactive during the dry season every year something to worry about, or is this mostly a voluntary withdrawal out off the labour force by those who are drawn upon to help during the peak cultivating period, and who would normally not participate in the labour force otherwise? The answers to these questions will be important in appropriately targeting help to the needed groups and areas. This chapter will also look briefly at the some new data related to the Rural Job Creation Program. The issue is whether the structure of participation in the program indicates that the Program has reached the groups in the rural population that really need the help during the dry season. This has to be viewed in the context of other methods by which rural labour adjusts to lack of work in the dry season, with one important avenue out being seasonal migration to work in other areas.

4.2 OVERVIEW

The employment pattern by major production sectors are given in Table 4.2.1, with break downs into agriculture, industry and services, and given separately for the periods January-March and July-September. (In 1980, the Census year, there was no Labour Force Survey for the January-March round)

TABLE 4.2.1

EMPLOYMENT BY MAJOR SECTORS AND PERIODS

YEAR	JANUARY-MARCH				JULY-SEPTEMBER			
	AGRIC	INDUSTRY	SERVICES	TOTAL	AGRIC	INDUSTRY	SERVICES	TOTAL
1977	9,841,199	2,428,177	3,831,754	16,101,130	15,012,786	1,760,950	3,626,516	20,400,252
1978	10,597,460	2,250,593	3,972,204	16,820,257	16,084,181	1,880,244	3,843,412	21,807,837
1979	9,796,872	2,896,196	4,242,172	16,935,240	15,161,841	2,228,103	3,987,839	21,377,783
1980	N.A.	N.A.	N.A.	N.A.	16,092,129	2,322,839	4,265,863	22,680,831
1981	9,421,052	3,019,853	5,102,668	17,543,573	17,809,850	2,346,319	4,555,917	24,712,086
1982	9,790,624	3,305,928	5,519,624	18,616,176	17,428,853	2,680,079	5,260,335	25,369,267
1983	11,528,677	3,458,247	5,653,372	20,640,296	17,401,473	2,511,636	5,270,418	25,183,527
1984	13,398,676	3,318,997	5,602,838	22,320,511	18,130,356	2,767,493	5,101,085	25,998,934
1985	13,383,271	3,368,254	5,851,217	22,602,742				

SOURCE: Labour Force Surveys 1977-1985, NSO

The main thing to notice in this table is that there is a clear seasonal variation pattern. The July-September period corresponds roughly to the peak cultivating seasons in most areas, while January-March is the dry season. We can see clearly that agricultural employment declines drastically between the two seasons. Industry and Services employment increases slightly in the dry season. On average, agricultural employment is around 5-6 million less during the January-March period compared to the July-September period (except for the years 1981 and 1982 when the figures were around 8 million). Employment in industry and services increases by around 1 million workers in the dry season. The figure for agricultural employment here also includes those employed in fisheries and forestry. Employment in the latter sectors are however relatively small, accounting for about 700,000 individuals in July-September 1984, and the employment pattern in these sectors also show an increase during the dry season as some agriculture workers shift to these occupations during the dry season.

TABLE 4.2.2

SHARES OF EMPLOYMENT BY MAJOR SECTORS
(JULY-SEPTEMBER LABOUR FORCE SURVEYS)

YEAR	AGRIC	INDUSTRY	SERVICES	TOTAL
1977	73.6%	8.6%	17.8%	100.0%
1978	73.8%	8.6%	17.6%	100.0%
1979	70.9%	10.4%	18.7%	100.0%
1980	71.0%	10.2%	18.8%	100.0%
1981	72.1%	9.5%	18.4%	100.0%
1982	68.7%	10.6%	20.7%	100.0%
1983	69.1%	10.0%	20.9%	100.0%
1984	69.7%	10.6%	19.6%	100.0%

Table 4.2.2 gives the share of employment by major sectors (based on July-September figures). It can be seen that agricultural employment accounts for about 70% of total employment. Since 1977, the agriculture share has been declining, from 73.6% in 1977 to 69.7% in 1984, although in the last three years the share seemed to have increased slightly. In fact, over the 5 years between 1979 and 1984 the elasticity of employment with respect to real value added has been highest in agriculture (at around .98), with industries and services having similar elasticities of about 0.8. Thus, while agriculture has shown lower growth than the other sectors in recent years, it has managed to retain its share of employment.

While agriculture employs by far the largest number of workers, it is the sector with the lowest value-added per man, as shown in Table 4.2.3. In 1984, the value-added per worker in agriculture was only 4867 baht in 1972 prices. This is about 7 times less than the value-added per man in industries or services. Thus, there is much room in which to improve labour productivity in agriculture, but this will probably only happen together with a substantial decline in the share of agricultural employment, given that the share of agricultural value added in GDP is currently only around 23% and has been declining steadily.

TABLE 4.2.3

REAL VALUE-ADDED PER WORKER
1979-1984
(1972 PRICES)

	1979	1980	1981	1982	1983	1984
AGRICULTURE	4,988	4,676	4,702	4,864	4,875	4,867
INDUSTRY	33,448	34,938	37,661	34,263	35,811	35,288
SERVICES	29,214	29,949	31,561	29,345	30,640	33,844
ALL	12,721	12,524	12,798	13,050	13,420	13,793

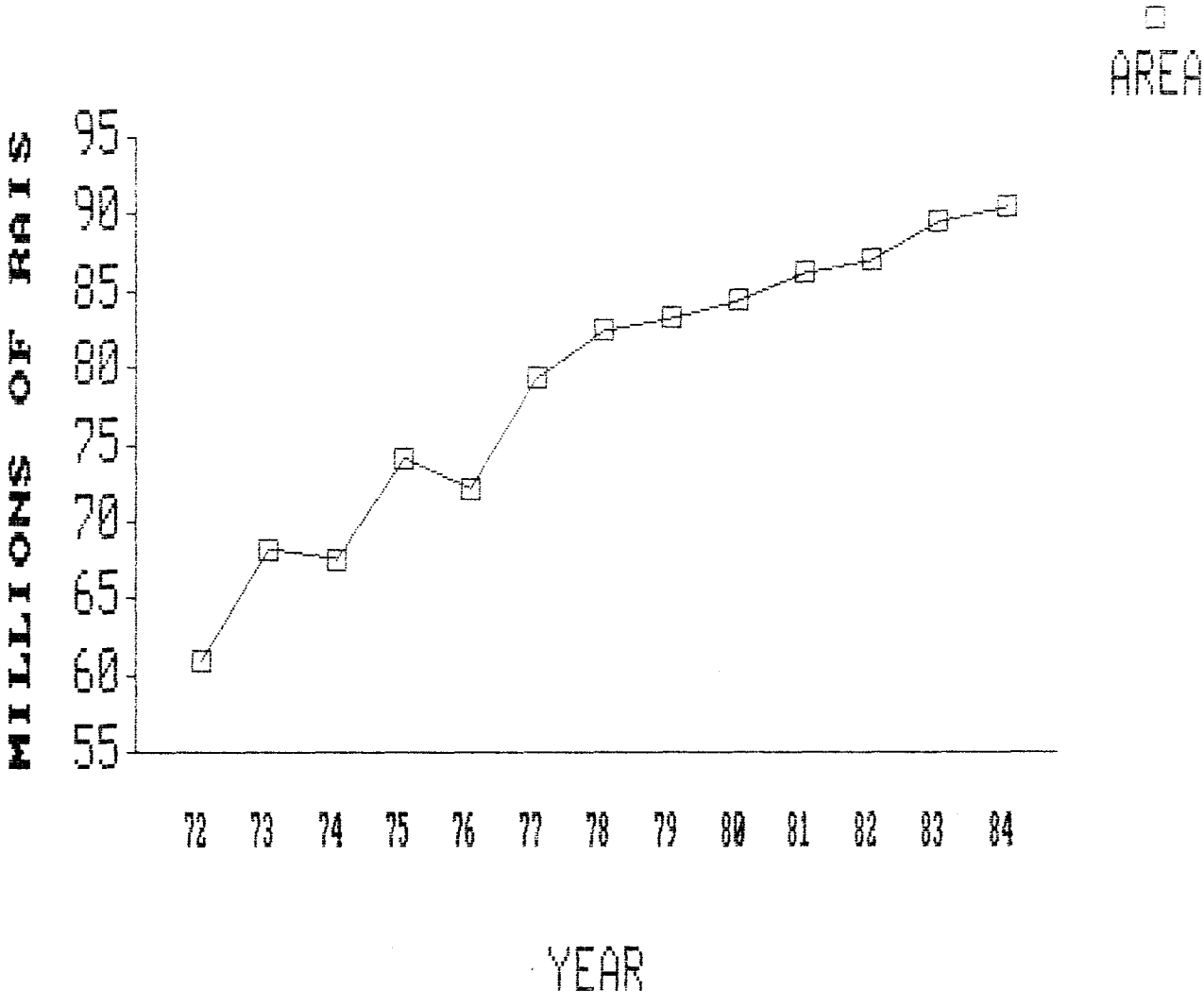
4.3 LABOUR ABSORPTION IN AGRICULTURE

The ability of agriculture to absorb labour is related to the availability of new cultivated areas. Indeed, this has been the main reason why agriculture has been able to retain a very high share of employment even though its share in value-added is now fairly small. With population pressure in the past, the rural population has migrated to other rural areas to open up new land for cultivation. Figure 4.1 shows the increase in cultivated area of major crops between 1972 and 1984. This excludes rubber, for which data was not available for the whole period, and also the areas used for the second rice crops.

The picture shows clearly that there seems to be a turning point around 1978, when the rate of growth in cultivated area has slowed down compared to the period 1972-1978. Between 1972 and 1978, the average growth in cultivated area was about 3.3% per annum. Between 1978 and 1984, the rate declined dramatically to 1.4% per annum. It is unlikely that the rate of growth will be any higher than this in the future, and is more likely to decline further, given that the forest areas have already been extensively exploited.

FIGURE 4.1

TOTAL CULTIVATED AREAS OF MAJOR CROPS
(excluding rubber and second rice crop)



Source: Office of Agricultural Economics
Ministry of Agriculture & Co-operatives

Apart from total cultivated areas, the distribution among different crops is also important from the employment point of view, both because each crop has different labour requirements for a given amount of land, and also because the pattern of labour use by month varies a great deal for different crops.

In general, the importance of paddy has been declining, both in terms of its share in agricultural GDP and also in cultivated area. In 1976, paddy accounted for 69% of all cultivated land. This has declined to 64% in 1983. Other tree crops, and field crops, particularly the latter, have increased their share of the cultivated area accordingly. In terms of value added, if one looks at the major crops, the share of paddy declined from 66.6% in 1972 to 53.6% in 1984. Of the other crops, cassava showed the largest gain, increasing from 6.8% to 15.9%. Sugar also almost doubled its share, from 6.7% to 11.2%, and maize increased slightly from 5.8% to 8.9%.

TABLE 4.3.1

LABOUR REQUIREMENT PER RAI RELATIVE TO PADDY

CROP	MAN/RAI
PADDY	100%
MAIZE	86%
SORGHUM	28%
MUNGBEAN	49%
SOYBEAN	96%
GROUNDNUT	165%
COTTON	203%
CASSAVA	123%
SUGARCANE	182%
RUBBER	158%
COCONUT	67%

Table 4.3.1 shows the average yearly labour requirement per rai for various major crops relative to paddy. We can see that this varies quite widely. The most labour intensive are cotton and sugarcane, with about twice the labour requirement of paddy. The lowest is sorghum, at 28% of paddy, and also mungbean (49%). What this means is that to estimate the demand for labour in agriculture, one must have some idea of the likely cropping pattern to be expected. The issue is in fact quite complicated because depending on where one is located, the possibility of

changing cropping patterns are very different. For example, in flooded lowlands, it is difficult to grow other crops in substitute for paddy in the wet season.

TABLE 4.3.2

SHARE OF LABOUR USE BY CROPPING ACTIVITIES IN THE NORTH-EAST (JANUARY-MAY AND JUNE-DECEMBER)

ACTIVITIES	JAN-MAY	JUNE-DECEMBER
FIRST NON-GLUTINOUS RICE	.5%	99.5%
FIRST GLUTINOUS RICE	.6%	99.4%
SECOND NON-GLUTINOUS RICE	100.0%	.0%
SECOND GLUTINOUS RICE	100.0%	.0%
FIRST MAIZE CROP	20.4%	79.6%
SECOND MAIZE CROP	.0%	100.0%
SORGHUM	.0%	100.0%
FIRST MUNGBEAN CROP	100.0%	.0%
SECOND MUNGBEAN CROP	.0%	100.0%
FIRST SOYBEAN CROP	100.0%	.0%
SECOND SOYBEAN CROP	.0%	100.0%
FIRST GROUNDNUT CROP	100.0%	.0%
SECOND GROUNDNUT CROP	.0%	100.0%
KENAF	30.3%	69.7%
CASSAVA	39.3%	60.7%
SUGARCANE	70.9%	29.1%

Apart from the different intensities, the various crops also differ in terms of the requirement on labour time through out the year. This is particularly relevant for the issue of seasonal employment patterns. Table 4.3.2 shows the percentage of yearly labour requirements for two broad periods of the year in the North-east, January-May and June-September.

For most crops, the labour requirement is almost totally within one or the other period of the year. A little bit of preparation is required in May for the first rice crops, but 99% of labour time is used during the latter part of the year starting from June. The second rice crops are grown in the first 5 months of the year. The first maize crop starts in May, and continue on till August, and the second crop occupies September to December. The first and second crops of Mungbean, Soybean and Groundnut occur exclusively in the first and second part of the year respectively. Cassava and Sugarcane require labour through out the year, with Cassava requiring more labour in the latter

part while the opposite is true for Sugarcane. Kenaf is grown between April and October, with heavy labour requirements in May and October, but in terms of the two periods, more labour is required in the latter.

The above picture of labour utilization for different crops shows that to analyze the issue of labour demand in agriculture, the model used must be extremely rich. Each crop is different, and a single crop grown in different areas and land types are also slightly different in terms of labour use and the distribution of labour time over the course the year.

TDRI is current building a model of the agriculture sector which focuses precisely on the issue of labour absorption. The objective is to have a model which will be able to capture the response of cropping pattern changes and hence labour demand patterns to changes in crop prices. Over the next few years, some crops have better prospects than others, and it is important to know the scope of adjustments that farmers can make to these prices, and the resulting pattern of demand for labour. In 1985, TDRI commissioned a study to build a Linear Programming model of the agriculture sector to look at the labour absorption issue (Chalamwong and Khatikarn: Land Availability and Labour Absorption in Agricultural Sector as Consequences of Demographic Change in Thailand, 1987-1992, TDRI 1985). Based on the experiences gained from that study, it was realized that while the linear-programming framework could capture a great deal of details on agricultural diversification and labour use patterns, it had some fundamental built in weaknesses which needed to be improved upon in order to gain more satisfactory results. The current model is an extension of the previous model, and it is essentially a Non-linear Programming model of the agricultural sector, using very much the same data base that the Linear-programming model uses.

The main drawback to the linear programming framework is that due to the linear nature of the relationships, the model tends to be too sensitive to small parameter changes, such as changes in relative prices. Thus, unless a lot of assumptions are made constraining the degree to which different crops can be substituted in production, it is quite likely the price changes will lead to complete specialization in production in only a handful of crops, which is not very realistic and could be very misleading. Usually, some type of land constraints are imposed on the solutions, eg. that land used for a certain crop cannot decrease or increase more than a certain amount, and it is essentially these externally imposed constraints that determine the solution. If the data base for such a model is extremely rich and reliable, then many of the constraints could be derived

from the technical feasibility of various land types in growing certain crops. However, in the case of Thailand, this is certainly not the case yet.

In the Non-linear framework that is used, the solution changes smoothly with changes in parameter values, and is therefore more appropriate for the analysis at hand, which is to focus on the changes in cropping pattern in response to changing relative crop prices. The technical details of this model will be reported elsewhere. Here only a brief intuitive description will be given.

Basically, the idea is to assume that productivity will eventually decrease as the planted area for a particular crop increases. This is intended to capture effects related to quality of the land. Usually, in a particular area, the best land for a crop will be used first. If income from a certain crop is higher than others, then more and more people will shift to this crop. The limit of expansion sets in when the marginal return on all crops are equalized, and this gives the solution for the model. In fact, this is not any new idea. It is simply applying the idea of the diminishing marginal product of land (developed since Adam Smith and David Ricardo). Because of diminishing marginal productivity, returns are no longer linear with land as in the linear-programming framework, and changes in crop prices will lead to gradual changes in the cropping pattern. A method was found to estimate the coefficients on diminishing marginal productivity using time series data on cropping pattern, costs, prices, and wages, which exploits the equations describing the solution of the model, so that the degree of substitutability has groundings in empirical data.

Apart from the formulation in terms of a non-linear programming rather than a linear-programming model, the data base and disaggregations follow closely that in the work of Chalamwong and Khatikarn. The country is divided into 6 regions; Central, North, North-east, South, East, and West. Within each region, the land areas are split into 3 major groups based upon land type and seasonality criterion. These are (i) Wet season lowland, (ii) Dry season lowland, and (iv) Upland. These in turn are split up according to whether they are irrigated or rainfed. The cropping pattern by region for the three major land types are given in table 4.3.3.

Some limitations of the model as it exists at the present time should be mentioned. Currently, the model only contains the major crops. The minor crops, and such things as fruits and vegetables will be added as better data become available (there is a lack of reliable information on costs and labour usage pattern at present). Also, given the focus of current policies

on "agricultural" diversification rather the "crop" diversification, some exploration of the introduction of alternate land use activities, such as aqua-culture, will be explored, but again reliable data is one key limitation. Also, given that most people have their livelihood in the major crops, it is unlikely that these other activities can make much impact on labour absorption over the period of the Sixth Plan.

Another area which must be improved is the intensification of labour use. Some substitutability can be captured by introducing different techniques of productions. Currently, the labour requirement for a particular crop in a particular land type and area is assumed to be fixed. For the results of the simulation that will be reported below, this is unlikely to make much difference, because the scenario assumes that the relative price for different inputs do not change; only crop prices change.

TABLE 4.3.3

CROPPING PATTERN BY LAND TYPES BY REGIONS

Region	Land Type Wet Season Low Land	Dry Season Low Land	Upland
Northeast	Rice Glutinous Rice	Rice, Glutinous Rice Soybean, Mungbean Groundnut	Maize, Sorghum, Sugarcane, Kenaf, Cassava, Soybean, Mungbean.
North	Rice Glutinous Rice	Rice, Glutinous Rice Mungbean, Soybean Groundnut	Maize, Sorghum, Sugarcane, Mungbean Groundnut, Cassava
Central	Rice Glutinous Rice	Rice, Mungbean Groundnut, Sugarcane	Maize, Sorghum, Soybean, Mungbean, Groundnut, Cassava, Sugarcane, Cotton.
West	Rice	Rice	Maize, Cotton, Cassava, Sugarcane
East	Rice	Rice	Maize, Cotton, Cassava, Sugarcane.
South	Rice	Rice	

In the solution for the model, the assumptions for the maximum available land area for cultivation was taken from that in Chalamwong and Khatikarn. In general, this amounted to an average increase of just over 1% per annum in available land, which is in line with the trend on cultivated areas mentioned earlier. The increases of course differed depending on land types and regions.

The assumptions on crop prices (in real terms) are shown in Table 4.3.4. These are rather bleak, with sugar being the only commodity with any real prospects. The assumptions were based to some extent on the World Bank's commodity price forecasts, but were adjusted to round out the numbers or where we thought the forecast was rather unrealistic. The major adjustment is on the price of sugar, where the World Bank projects an increase in real terms of over 12% per annum to 1990. For the simulation, we assumed that the increase would be 4% per annum in real terms,

and this is still much better than that for any other crops by far. Rice prices are assumed to show no change in real terms, as with mungbean. Maize, sorghum, and groundnut are assumed to decline by about 2% per annum in real terms; kenaf decreasing by 4% in real terms per annum, the worse of any crop; cassava falling by .5% per annum. Apart from sugar, only cotton and soybean are expect to show a price rise in real terms, and only slightly.

TABLE 4.3.4

PRICE ASSUMPTIONS FOR MAJOR CROPS
1986-1991

CROP	REAL PRICE INCREASE PER ANNUM
NON-GLUTINOUS RICE	.0%
GLUTINOUS RICE	.0%
MAIZE	-2.0%
SORGHUM	-2.0%
MUNGBEAN	.0%
SOYBEAN	1.0%
GROUNDNUT	-2.0%
KENAF	-4.0%
CASSAVA	-.5%
SUGARCANE	4.0%
COTTON	.5%

The costs of production and wages are assumed to be constant in real terms, and inflation for the period is assumed to average 2% per annum. The assumption on wages can be regarded as a starting point to judge the outlook for labour absorption. While there is as yet no real labour substitutability in the model (for the production of a particular crop), it does influence the amount of land that is actually used. It may be the case that if labour demand is not sufficient to absorb the expected increase in the labour force, then real wages would fall, and this will increase the demand for labour somewhat. However, a zero increase in real wage over the whole period of the Sixth Plan is already a bleak prospects. If even this will not lead to sufficient demand, then the situation is indeed worrying.

Given the price projections, one would expect that there would be a shift out of crops whose price outlook are bad to those where prices are better. Of course, there is a limit on

how far this can occur, because an expansion of a given crop will generally imply using land with is less suitable, with a decline in productivity. However, some substitution is bound to take place, and this is actually what the solution shows.

TABLE 4.3.5

INCREASE IN LABOUR USE BY CROPS
(1984-1991)

	PERCENT PER ANNUM
FIRST RICE CROPS	1.08%
SECOND RICE CROPS	.06%
CASSAVA	-2.16%
MAIZE	-4.35%
SUGARCANE	5.62%
SORGHUM	-6.33%
MUNGBEAN	13.89%
SOYBEAN	10.55%
GROUNDNUT	.65%
COTTON	6.51%
KENAF	-4.36%
RUBBER	1.32%

Table 4.3.5 shows the average growth per annum of labour use for the various crops between 1984 (the base year in the model) and 1991. Employment in rice is expected to increase by about 1% per annum. In fact, the substitution possibilities for the main rice crop is fairly limited, so one does not expect any dramatic changes. For the other crops, the situation is different.

Maize, which is a major of user of labour in the North, shows a decline by over 4% per annum. This results from a large shift out off maize in the North into mungbean, sugarcane, soybean and cotton, crops whose price prospects are better. Employment in cassava is expected to decline by 2.2% per annum. Again, there is shift out off cassava in all regions where it is grown. The other big losers are sorghum and kenaf, crops where prices are expected to decline a lot in real terms.

Sugarcane expands as expected, with employment growth increasing at 5.6% per annum. This occurs everywhere but is most pronounced in the Western and Eastern region, where there is a shift from both cassava and maize into sugarcane. Mungbean and Soybean are big gainers, because of their relatively better price prospects compared to some of the other crops. In the North, employment in soybean is expected to expand by almost 70%, and in the North-east and Central Plains, it is expected to expand by around 50% between 1984 and 1991. Mungbean expand most rapidly in the North, where it is one major substitute to maize. In the North-east, it also gains at the expense of kenaf. Cotton also show a big increase in employment, with the gains being substantial in the North and the West.

In general, the results appear to be intuitively reasonable. The crops where prices are expected to be relatively bad are substituted for by the other crops. As the model is ready for simulation recently, no other scenarios have been tried out. The results for just this one case, however, suggest that the behaviour is quite realistic, and other experiments will be tried in the future.

TABLE 4.3.6

EMPLOYMENT GROWTH IN WET AND DRY SEASON
(1984-1991)

	1984		1991		AVERAGE GROWTH	
	DRY SEASON	WET SEASON	DRY SEASON	WET SEASON	DRY SEASON	WET SEASON
NORTH	3539760	4525186	4074981	4552721	2.86%	.12%
NORTH-EAST	4625913	8182253	5155577	8304627	2.19%	.30%
SOUTH	1859400	1960637	2025006	2112888	1.72%	1.51%
CENTRAL	2777426	2964966	3158299	3155455	2.60%	1.25%
TOTAL	12802499	17633042	14413863	18125691	2.40%	.55%

Table 4.3.6 shows the pattern of labour demand by season derived from the solution. The results were adjusted to be comparable with the Labour Force Survey figures in 1984, by taking the growth rates from the model and adjusting the employment figure from the Labour Force Survey. For the dry season, average labour use between January and May was used,

because from the labour use figures this seems to correspond to period when the dry season crops are grown. The average for the rest of the year was used for the wet season figures.

A clear pattern is that the growth in labour demand is expected to be much greater during the dry season compared to the wet season. The fact that wet season labour demand does not increase very much is because of the very poor outlook on prices. The growth in cultivated area is slower than that in the maximum available cultivated area assumed in the model. In the dry season, the growth comes mainly from sugarcane, where the price is good, and this is the crop that is fairly labour intensive (1.82 times that of paddy), and also uses more labour in the dry season than the wet season, see table 4.3.2.

The implication for labour demand is not bright. While it is true that dry season employment is to grow more than in the wet season, the overall rate is about the same as that expected for the rural labour force (see Chapter 3). Currently, the rate of seasonal unemployment is around 19% of the labour force, and given a dry season employment growth in agriculture of around 2.4% seasonal unemployment will not improve much.

The growth of only .5% per annum in wet season labour demand is very worrying. This is far less than the expected increase in the labour force dealt with earlier. Three things can be expected from this scenario.

1. Real wages in rural areas may actually fall during the period of the Sixth Plan, rather than be constant as assumed in the simulation.

2. Underemployment can be expected to increase rapidly.

3. Migration from the rural areas will be large, and may resemble the high urbanization population projection more than the base case.

There is no doubt that with the expected trends in the price of major crops, the outlook for the rural population cannot be anything but bad. This section has tried to quantify part of the problem, at least as far as it relates to the demand for labour, which is of course the major determinant of incomes in the rural areas. The next section will begin to look in more detail at the question of seasonality, leading up to an analysis of seasonal migration, which is one major way that the rural population copes with low income and the lack of agricultural labour demand in the dry season.

4.4 SEASONAL UNEMPLOYMENT

Table 4.4.1 gives the figures for seasonal unemployment from the 1977 to 1985. These figures are based on the January-March rounds of the labour force surveys, and there is no data for 1980, because in that year the January-March round of the Labour Force Survey was not collected due to it being a census year. These numbers have been adjusted to make them comparable across years, as the Labour Force Survey underwent major changes in various unemployment definitions in 1983. In relation to seasonal unemployment, the most controversial is the inclusion of those own account workers who would normally be regarded as part of the seasonally unemployed in earlier years as part of the employed. There are arguments both ways, because on the one hand the own account workers in agriculture are mostly farm owners, and therefore even with no work they may have to stay around to look after the farm, and on the other hand, those without work and in the labour force, which these people presumably are, are essentially unemployed. In any case, the figures here use a definition consistent with the older one to be comparable. The table also gives the rate of seasonal unemployment (in relation to the labour force, which includes all those who are employed, under employed, openly unemployed, and seasonally unemployed).

The data shows that seasonal unemployment is a problem that affects a great number of people. The total is around 4 million workers, except for 1981 and 1982 when the figure was around 5.5 million. The seasonal unemployment rates are around 20%, again except 1981-2. In the South there is not much seasonal unemployment. The Central region has around 400,000 but is less than 10% of the labour force recently. The main problem of seasonal unemployment occurs in the North and particularly the North-east, where it is severest, affecting over 30% of the work force.

Ignoring the years 1981 and 1982, where the figures suddenly jumped, and may possibly be due to sampling methodology, the total number of the seasonally unemployed appears to be fairly stable at around 4 million workers. The problem appears to be getting much better in the Central region, presumably because of much more diversification of agriculture. The numbers of seasonally unemployed appear to have been quite stable in the North and North-east, at around 1 million and 2.7 million respectively, and the South shows a slight increase. However, because the workforce is increasing, the rates of seasonal unemployment in the North and North-east have been falling.

TABLE 4.4.1

SEASONAL UNEMPLOYMENT NUMBERS AND RATES
(1977-1985)

LABOUR FORCE SURVEY 1977 ROUND 1

	NORTH	NORTH-EAST	SOUTH	CENTRAL	TOTAL
SEASONAL UNEMPLOYMENT	1,065,740	2,306,910	53,660	537,310	3,963,620
SEASONAL RATE	24.51%	30.32%	2.34%	13.78%	21.84%

LABOUR FORCE SURVEY 1978 ROUND 1

SEASONAL UNEMPLOYMENT	863,930	2,673,870	38,850	445,410	4,022,060
SEASONAL RATE	19.55%	35.20%	1.54%	11.09%	21.68%

LABOUR FORCE SURVEY 1979 ROUND 1

SEASONAL UNEMPLOYMENT	985,570	2,823,780	128,080	431,890	4,369,320
SEASONAL RATE	21.60%	36.18%	5.38%	10.86%	23.34%

LABOUR FORCE SURVEY 1981 ROUND 1

					TOTAL
SEASONAL UNEMPLOYMENT	1,497,200	3,274,970	48,440	749,980	5,570,590
SEASONAL RATE	28.98%	39.48%	3.01%	16.48%	28.39%

LABOUR FORCE SURVEY 1982 ROUND 1

					TOTAL
SEASONAL UNEMPLOYMENT	1,482,030	3,442,910	71,470	460,620	5,457,030
SEASONAL RATE	27.35%	40.13%	2.57%	9.75%	25.38%

LABOUR FORCE SURVEY 1983 ROUND 1

					TOTAL
SEASONAL UNEMPLOYMENT	992,420	2,775,220	75,320	573,810	4,416,770
SEASONAL RATE	20.05%	35.90%	2.89%	13.00%	22.42%

LABOUR FORCE SURVEY 1984 ROUND 1

					TOTAL
SEASONAL UNEMPLOYMENT	675,410	2,770,270	77,880	244,020	3,767,580
SEASONAL RATE	12.79%	33.26%	2.87%	5.37%	18.05%

LABOUR FORCE SURVEY 1985 ROUND 1

					TOTAL
SEASONAL UNEMPLOYMENT	946,680	2,771,820	121,390	348,620	4,188,510
SEASONAL RATE	17.41%	31.47%	4.29%	7.24%	19.[illegible]

It is not surprising that there should be a large number of people seasonally unemployed. We already saw how the demand for labour in agriculture varies tremendously by season. The main problem is to interpret just what seasonal unemployment means. Is it a problem? Does it signify some kind of market failure in the rural areas?

One school of thought believes that seasonal unemployment is not really a problem. Markets are thought to work fairly well in the rural areas, and if these unemployed really wanted work then wages should fall to absorb them. Rather, the seasonal unemployed are thought of as being mostly voluntary withdrawal from the labour force. The idea is that during the cultivating season, when the demand for labour is particularly high, women and young children are drawn upon to help with work, and when the season is over, these simply withdraw back from the labour force, and that is why we observe such a variation in employment between the wet and the dry season.

TABLE 4.4.2
SEASONAL UNEMPLOYMENT
(JANUARY-MARCH 1985)

	TOTAL			SHARES			
MALES	OWN-ACC	OTHERS	TOTAL	MALES	OWN-ACC	OTHERS	TOTAL
11-14	0	58020	58020	11-14	.00%	7.71%	2.71%
15-19	1430	294580	296010	15-19	.10%	39.15%	13.83%
20-24	57730	235560	293290	20-24	4.16%	31.31%	13.71%
25-29	145410	103640	249050	25-29	10.48%	13.77%	11.64%
30-34	212310	35780	248090	30-34	15.30%	4.76%	11.59%
35-39	224010	13270	237280	35-39	16.15%	1.76%	11.09%
40-49	319890	7110	327000	40-49	23.06%	.94%	15.28%
50-59	269550	2150	271700	50-59	19.43%	.29%	12.70%
60+	156960	2310	159270	60+	11.31%	.31%	7.44%
TOTAL	1387290	752420	2139710	TOTAL	100.00%	100.00%	100.00%
FEMALES	OWN-ACC	OTHERS	TOTAL	FEMALES	OWN-ACC	OTHERS	TOTAL
11-14	0	56530	56530	11-14	.00%	3.28%	2.76%
15-19	3170	400120	403290	15-19	.97%	23.23%	19.68%
20-24	11820	301150	312970	20-24	3.62%	17.48%	15.28%
25-29	36200	218930	255130	25-29	11.10%	12.71%	12.45%
30-34	38420	181640	220060	30-34	11.78%	10.54%	10.74%
35-39	27030	151680	178710	35-39	8.29%	8.80%	8.72%
40-49	86640	217440	304000	40-49	26.56%	12.62%	14.84%
50-59	94980	147360	242340	50-59	29.12%	8.55%	11.83%
60+	27930	47840	75770	60+	8.56%	2.78%	3.70%
TOTAL	326190	1722690	2048800	TOTAL	100.00%	100.00%	100.00%

Table 4.4.2 shows the age distribution of seasonal unemployment from the January-March 1985 survey. The seasonal unemployed are split up into males and female, and own-account workers (mostly farm owners) and others. It can be seen that ignoring the own-account workers, where the mean age is quite high, for men it is certainly true that most seasonal unemployed are below 25. Almost 40% are between the age of 15 and 19. For women, the age distribution is less concentrated, and those below 25 makes up about 54% of the seasonal unemployed in contrast to the very high ratio of around 78% for men.

One thing to bear in mind is that most rural population above 15 are no longer at school, so that the presence of a lot of these as seasonal unemployed does not mean that they can be regarded as voluntary withdrawal from the labour force. To gain

more insight into what people do during the dry season, and whether they are active in seeking work, it is necessary to study how people adjusts to the dry season situation.

One way they adjusts is to work off-farm in non-agricultural pursuits. It is estimated that about 15% of the people who normally work in agriculture during the wet season find non-agriculture work in the same locality (based upon preliminary individual matching of data from various Labour Force Surveys, which normally uses the same sample frame for the January-March and July-September surveys).

Another, and one which shall be examined in detailed below is seasonal migration. Because the various crops have different pattern of labour demand as we saw earlier, there is a demand for workers from elsewhere to help in particularly heavy periods. Thus, it is commonly known that sugarcane plantations often go to great lengths to recruit workers in other parts of the country to help during the heavy cutting season. Workers also move elsewhere to work outside off agriculture. Thus, they may come to Bangkok or other cities where there are jobs. The study of seasonal migration below will present findings based on new data that, for the first time, gives the picture on seasonal migration for the whole kingdom. While there have been a number study of seasonal migration for particular villages or areas (see eg. Panpiemras and Krusaunsombat: Seasonal Migration and Employment in Thailand), such a complete picture for the country has never been available. The analysis will also give a quantification of the extent to which people are active in seeking work in the dry season. Generally, it shows that people are extremely active in seeking jobs in the dry season. The main impediment is information on the availability of jobs. The findings goes against the view that seasonal migration is not really a problem because much of it is just a voluntary withdrawal from the labour force.

4.5 SEASONAL MIGRATION

QUANTIFYING SEASONAL MIGRATION

We saw earlier that the seasonal unemployment problem in rural areas is unlikely to get better over the Sixth Plan. Seasonal migration is one important avenue for people in rural areas to supplement their income during the dry season, when the demand for labour in agriculture declines drastically. One objective of a recent joint World Bank-NSO-NESDB project was to obtain, for the first time, a complete picture on seasonal migration flows in Thailand. To do this, a number of questions concerning seasonal migration were added to the July-September round of the 1984 Labour Force Survey. This is the time when most of those who temporarily migrate during the dry season should have already returned to their normal place of residence. The questions concerning seasonal migration were asked only of those residing in the non-municipal areas during July-September. Part of the reason was the need to limit the total number of questions to be added, as those in municipal areas were asked additional questions related to labour market segmentation. Another reason is that most seasonal migrants are those who normally work in agriculture, and live mostly in the non-municipal areas. The relevant questions asked of respondents include the followings:- Did they live in the current village during January 1984 (i.e. the same village that they are currently living in July-September 1984); If so, did they move to work elsewhere between January and June; For those who moved, where did they go, for how long, mainly in which month, what kind of work did they do, how much were they paid, how did they find the job, did they obtain the job before actually moving, otherwise how long it took to find the job, and the reason for moving; For those who did not move, did they attempt to find work outside the village, if not the reason why not, if they did, whether they got the job, and if so why they did not move.

The overall picture on seasonal migration from the survey is given in Table 4.5.1-4.5.2 (the weights used for the individual observations are those corresponding to the weights in the July-September survey). In total 29,927,110 people live in non-municipal areas during July-September. Of these, 98.34% lived in the current village in January. For these 29,431,800 people the following classifications can be made. First, we separate out those who did not move because either: (i) they have a job in the village, (ii) they just did house work, (iii) they were studying, or (iv) they were too young or too old. In total these amount to 23,902,080 or 81.2% of those present in January 1984. The other 4,131,620 are regarded as potential seasonal

migrants. (In fact, this may be an underestimate as those who work or do house work may also be potential movers.) Of the potential movers (potential seasonal migrants), 744,690 (18.02%) actually moved to work (and live) outside the village at some point during January-June 1984. Of those who did not move, about an equal number 734,830 looked for a job outside the village. About half of these 358,790 found a job but did not move, and 376,040 people could not find a job. 2,652,100 people did not look for a job outside the village, although 34.6% of these said the reason they did not look was because they did not know how to look for a job outside the village.

TABLE 4.5.1
WORK PATTERNS DURING THE DRY SEASON
(BASED ON ADDITIONAL QUESTIONS IN LABOR FORCE SURVEY 27 ROUND 3)

		MALE		FEMALE		TOTAL	
TOTAL	(I+II)	14947230		14979880		29927110	
I NOT IN VILLAGE		291890		203420		495310	
II IN VILLAGE	(1+2+3+4+5)	14655340		14776460		29431800	
1 ALREADY GOT A JOB		9504650		8957850		18462500	
2 DID HOUSEWORK		80220		1444890		1525110	
3 STUDYING		2142070		1772400		3914470	
4 TOO YOUNG OR TOO OLD		529020		869080		1398100	
5 POTENTIAL MOVERS		2399380		1732240		4131620	
5.1 MOVED		544520		200170		744690	
5.1.1 NO JOBS AVAILABLE IN THE VILLAGE			208280		77810		286090
5.1.2 JOBS AVAILABLE BUT LOW INCOME			100850		26900		127750
5.1.3 NEED ADDITIONAL INCOME			156370		67060		223430
5.1.4 NEW JOB IS MORE SECURE			1130		4220		5350
5.1.5 OTHERS			77890		24180		102070
5.2 DID NOT MOVE		1854860		1532070		3386930	
5.2.1 LOOKED FOR A JOB		508080		226750		734830	
5.2.1.1 GOT THAT JOB		232140		126650		358790	
REASONS FOR NOT MOVING							
-INCOME DID NOT COMPENSATE THE EXPENSES			80880		44780		125660
-DID NOT LIKE THE JOB			8910		0		8910
-DID NOT WANT TO MOVE			88620		63260		151880
-OTHERS			53730		18610		72340
5.2.1.2 DID NOT GET A JOB		275940		100100		376040	
5.2.2 DID NOT LOOK FOR A JOB		1346780		1305320		2652100	
REASONS FOR NOT LOOKING FOR A JOB							
-DID NOT WANT TO MOVE			354130		369380		723510
-DID NOT KNOW HOW TO FIND A JOB			498560		418280		916840
-OTHERS			494090		517660		1011750

TABLE 4.5.2
PERCENTAGE OF WORK PATTERNS DURING THE DRY SEASON
(BASED ON ADDITIONAL QUESTIONS IN LABOR FORCE SURVEY 27 ROUND 3)

		MALE		FEMALE		TOTAL	
TOTAL	(I+II)		100.00		100.00		100.00
I NOT IN VILLAGE	I		1.95		1.36		1.66
II IN VILLAGE	II		98.05		98.64		98.34
CLASSIFICATION OF PERSONS IN VILLAGE	(1+2+3+4+5=100)	100.00		100.00		100.00	
1 ALREADY GOT A JOB		64.85		60.62		62.73	
2 DID HOUSEWORK		.55		9.78		5.18	
3 STUDYING		14.62		11.99		13.30	
4 TOO YOUNG OR TOO OLD		3.61		5.88		4.75	
5 NOT WORK IN THE AREA RESIDED		16.37		11.72		14.04	
CLASSIFICATION OF POTENTIAL MOVERS		100.00		100.00		100.00	
5.1 MOVED	(% OF ITEM 5)	22.69		11.56		18.02	
REASONS FOR MOVING			100.00		100.00		100.00
5.1.1 NO JOBS AVAILABLE IN THE VILLAGE			38.25		38.87		38.42
5.1.2 JOBS AVAILABLE BUT LOW INCOME			18.52		13.44		17.15
5.1.3 NEED ADDITIONAL INCOME			28.72		33.50		30.00
5.1.4 NEW JOB IS MORE SECURE			.21		2.11		.72
5.1.5 OTHERS			14.30		12.08		13.71
5.2 DID NOT MOVE	(% OF ITEM 5)	77.31		88.44		81.98	
5.2.1 LOOKED FOR A JOB	(% OF ITEM 5.2)	27.39		14.80		21.70	
5.2.1.1 GOT THAT JOB	(% OF ITEM 5.2.1)	45.69		55.85		48.83	
REASONS FOR NOT MOVING			100.00		100.00		100.00
-INCOME DID NOT COMPENSATE THE EXPENSES			34.84		35.36		35.02
-DID NOT LIKE THE JOB			3.84		.00		2.48
-DID NOT WANT TO MOVE			38.18		49.95		42.33
-OTHERS			23.15		14.69		20.16
5.2.1.2 DID NOT GET A JOB	(% OF ITEM 5.2.1)	54.31		44.15		51.17	
5.2.2 DID NOT LOOK FOR A JOB	(% OF ITEM 5.2)	72.61		85.20		78.30	
REASONS FOR NOT LOOKING FOR A JOB			100.00		100.00		100.00
-DID NOT WANT TO MOVE			26.29		28.30		27.28
-DID NOT KNOW HOW TO FIND A JOB			37.02		32.04		34.57
-OTHERS			36.69		39.66		38.15

In general, the impression that emerges from the total picture on seasonal migration is that the rural population is quite active in trying to overcome the inevitable lack of employment opportunity in the dry season. If one assumes that those who said they did not find an outside job because they did not know how to look for a job would like to look for a job, then

of the 4,131,620 potential movers, 2,396,360 (58%) want to find outside work. Only 875,390 people (21.2%) said that they plainly did not want to move.

Looking at the variation by sex, the main clear difference is that women are less inclined to move. A much lower proportion of the potential movers who are female moved, 11.56% (200,170) as compared to 22.69% (544,520) for males. Also, of those who did not move, only 14.8% of women tried to find an outside job compared to 27.4% for men; 25% of female potential movers said they did not want to move compared to 18.5% for men. This pattern is to be expected, given that there are more risks involved for women when going to work and live away from home.

From the tables, one can also work out the extent of seasonal inactivity. First, those who did housework, or were studying, or are too young or too old, can be regarded as not being in the labour force (this is of course not strictly true, particularly for those doing housework, as they may change their status under certain circumstances). This leaves 22,594,120 people as being in the labour force. Those who worked but did not move, and those who moved, did some work between January and June. The rest are seasonally inactive. In total, the seasonally inactive totaled 3,386,930 and comprises 15% of the total work force. This hardly varies by sex, with the rate for males at 15.6% and for females 14.3%. These figures cannot be directly compared to figures on seasonal unemployment or seasonal inactivity derived form various January-March rounds of the labour force surveys, because the latter are concerned only with work characteristics during the survey week, whereas the figures here represents a picture over many months. The figures here can however be thought of as a lower bound for seasonal inactivity when comparing with the January-March labour force surveys figures, and confirms that seasonal inactivity is a wide spread problem affecting millions of people.

REGIONAL VARIATIONS

The seasonal migration patterns show striking regional variations. There is a clear difference between the North-east and elsewhere. First, in terms of absolute number, more seasonal migrants move from the North-east (288,400) than elsewhere, although the movers from the North is also over 200,000 and from the Central region just under. However, because there are more than twice as many potential movers in the North-east than in any other regions, it turns out the ratio of the potential movers who actually move is much lower in the North-east than in the other

regions. The moving rate in the other regions are fairly similar, around 21-23%, but in the North-east it is only 13.7%.

TABLE 4.5.3
VARIOUS INDICATORS ON SEASONAL LABOUR USAGE BY REGION
BOTH SEXES

	NORTH	NORTHEAST	SOUTH	CENTRAL
POTENTIAL MOVERS	939,860	2,111,300	233,250	847,210
MOVED	215,290	288,400	48,440	192,560
% POTENTIAL MOVERS IN LABOUR FORCE	16.5	23.0	7.9	17.8
% POTENTIAL MOVERS WHO MOVED	22.9	13.7	20.8	22.7
% OF POTENTIAL MOVERS WHO ACTUALLY LOOKED FOR JOB	40.6	30.1	42.5	42.9
% POTENTIAL MOVERS WHO LOOK OR WOULD HAVE LOOKED FOR JOB	56.6	60.7	45.1	56.5
% OF THOSE WHO LOOKED FOR A JOB THAT FOUND ONE	87.0	67.9	59.8	77.3
% OF THOSE WHO FOUND A JOB THAT MOVED	64.9	61.5	81.7	68.6
% OF LABOUR FORCE SEASONALLY INACTIVE	12.8	19.8	6.2	13.8
% WHO DID NOT KNOW HOW TO LOOK FOR A JOB	26.9	43.7	4.5	23.8

This does not mean that people in the North-east are potentially less active in seeking outside jobs than people in other regions. In table 4.5.3, various summary statistics are given on regional differences. While it is true that the proportion of the potential movers who actually looked for an outside job is lower in the North-east (30%) compared to elsewhere (around 41-43%), if one also includes those who would have looked if they knew how (assuming those who said they did not look for an outside job because they did not know how to look would have looked if they had known), it turns out that the proportion in the North-east is the highest (60.7%). Thus, one major reason why a much lower proportion of potential movers seasonally migrate from the North-east is that the proportion who did not look for an outside job because they did not know how to look is much higher in the North-east compared to elsewhere. In the North-east, 43.7% of those who did not look for a job said they did not know how to look for a job outside the village; this compares with 26.9% in the North, 23.8% in the Central region, and only 4.5% in the South. This shows that an important constraint to seasonal migration is information, and that this problem is particularly severe for those in the North-east. Without, this constraint those in the North-east would be the most active in seeking outside jobs. This is quite understandable given that the North-east is the poorest Region.

Another reason why a lower proportion moved in the North-east is that, compared to the North and the Central region,

a smaller proportion of those who looked for a job found one, 67.9% in the North-east, 87% in the North, and 77.3% in the Central. The proportion in the South is the lowest, 59.8%, but this is offset by the fact that the South had the highest proportion of those who found a job that actually moved.

The North-east suffers from the severest problem of seasonal inactivity (19.8% of the labour force); the North and Central are similar (around 13%), and the rate in the South is the lowest (6.2%). The picture is fairly consistent with that from data from various January-March rounds of the Labour Force Surveys except for the Central Region, where the seasonally inactivity rate appears to be too high here.

The data here seems to be evidence against the view that most of the seasonally unemployed are voluntary withdrawals from the labour force. They show that a very high proportion of those without dry-season jobs in the place where they live, want to find work elsewhere, 1,479,520 persons actually looked for outside work (35.8% of the potential movers). Of those who looked, a fairly high number found a job, 74.6%. However, one major problem is information with 916,840 persons saying that they do not know how to look for a job (22% of the potential movers).

TABLE 4.5.4
VARIOUS INDICATORS ON SEASONAL LABOUR USAGE BY REGION
MALE

	NORTH	NORTHEAST	SOUTH	CENTRAL
POTENTIAL MOVERS	521,230	1,216,990	128,280	532,880
MOVED	155,020	214,970	39,420	135,110
% POTENTIAL MOVERS IN LABOUR FORCE	18.0	25.0	8.3	20.6
% POTENTIAL MOVERS WHO MOVED	29.7	17.7	30.7	25.4
% OF POTENTIAL MOVERS WHO ACTUALLY LOOKED FOR JOB	48.3	40.3	60.0	43.9
% POTENTIAL MOVERS WHO LOOK OR WOULD HAVE LOOKED FOR JOB	61.8	67.5	64.5	61.0
% OF THOSE WHO LOOKED FOR A JOB THAT FOUND ONE	87.6	66.9	60.5	77.8
% OF THOSE WHO FOUND A JOB THAT MOVED	70.3	65.6	84.7	74.2
% OF LABOUR FORCE SEASONALLY INACTIVE	12.6	20.6	5.7	15.4
% WHO DID NOT KNOW HOW TO LOOK FOR A JOB	26.2	45.5	11.3	30.6

TABLE 4.5.5
VARIOUS INDICATORS ON SEASONAL LABOUR USAGE BY REGION
FEMALE

	NORTH	NORTHEAST	SOUTH	CENTRAL
POTENTIAL MOVERS	418,630	894,310	104,970	314,330
MOVED	60,270	73,430	9,020	57,450
% POTENTIAL MOVERS IN LABOUR FORCE	15.1	20.7	7.4	14.5
% POTENTIAL MOVERS WHO MOVED	14.4	8.2	8.6	18.3
% OF POTENTIAL MOVERS WHO ACTUALLY LOOKED FOR JOB	31.0	16.3	21.2	41.1
% POTENTIAL MOVERS WHO LOOK OR WOULD HAVE LOOKED FOR JOB	50.1	51.4	21.5	48.7
% OF THOSE WHO LOOKED FOR A JOB THAT FOUND ONE	85.9	71.4	57.3	76.3
% OF THOSE WHO FOUND A JOB THAT MOVED	54.0	70.7	70.7	58.2
% OF LABOUR FORCE SEASONALLY INACTIVE	12.9	19.0	6.8	11.8
% WHO DID NOT KNOW HOW TO LOOK FOR A JOB	27.6	42.0	.3	12.9

The data on migration by sex and region is similar to that including both sexes. For both males and females, the seasonal migration rates are lowest in the North-east. This is also true for the proportion who actually looked for an outside job. The rate of those who do not know how to look for a job is highest in the North-east for both males and females, and if one assumes that these would have looked for a job if they knew how, then the proportion of those who looked or would have looked for a job is highest in the North-east for both sexes.

One clear difference from the overall pattern is that the rate of potential female migrants who move is almost as low in the South as in the North-east, 8.6% compared to 8.2%. In all the other regions around 50% want to find an outside job, but the rate is only 21.2% in the South, so that women in the South are much less active in finding work away from home. Almost no women in the South said they did not know how to look for a job, so information is not the problem. Probably the explanation lies in cultural differences, particularly religious factors.

The pattern of seasonal migration flows shows that for all regions except the South, the dominant flows are the intra-regional migrations. In the North, North-east, and the Central, around 67-70% of all migrants move within the region. In the South, most move "abroad", presumably to Malaysia or Singapore. Excluding intra-regional flows, the Central region and Bangkok are by far the most popular destinations, attracting 103,280 and 85,960 persons respectively. Very few move into the North-east, 2160, or the South, 4500, but there appears to be a fairly large flow from the Central region into the North.

About 50% of all seasonal migrants move to work in the agricultural sector. The situation is similar for just those who move across the regional boundary, with around 45% going to work in agriculture. This just reflects the differences in cropping pattern in various parts of the country, with the planting period for the same crop varying by location due to the weather and soil, and that for different crops due to natural factors. For non-agricultural work, about twice as many people move to work in industries compared to services, around 35% to industries and 15% to services. Again the pattern is similar for both intra- and inter-regional movements.

AGE AND EDUCATIONAL CHARACTERISTICS OF MIGRANTS

In terms of the educational characteristics of the movers, from the data, it is clear that seasonal migrants are not those with more than secondary education. Not a single case of seasonal migrants with more than secondary education was found. While there may by some seasonal migration of the better educated group (the results here are based on a 50% sub-sample of the 1984 Labour Force Survey), it is clear that the numbers will be very small. Actually, the better educated do suffer from a significant amount of seasonal inactivity, 29.6% for those with vocational education, 30.4% for those with university education, and 9% for those with teacher training. (These rates are fairly high, and is probably partly accounted for by those who have just left school in the second quarter of 1984). About 50% of them looked for a job outside the village. However, it is probably the case that they may not be looking for a temporary job to go to during the dry season, but rather more permanent jobs which are located outside of their village. Some of them may actually want to migrate more permanently. In any case, very few of these are seasonal migrants.

The age characteristics of migrants is given in Table 4.5.6. The data is quite illuminating. It turns out that the group with the highest proportion of movers to potential movers is the 15-19 years age group (at 24.9%), followed by 30-39 (22.3%), 40-59 (16.3%), 20-29 (14.3%), 11-14 (13.8%) and 60 and over (1.9%). For males, the rates for the 30-39 and 15-19 group are almost equal, with that for the former slightly higher. For females, the 15-19 age group has almost double the migration rate of those between 20 and 39, and the next highest group is in fact

those between 11 and 14, although the absolute number in this group is small because most children in the age group are still at school and are not considered potential movers.

In terms of those who actually looked for outside work, it is again the 15-19 years age group who are most active. The proportion of potential migrants in this age group who actually looked for work (including those who moved) is 45.4%; the next largest group is the 30-39 age group at 40%, and the lowest, excluding those over 60, is the 11-14 years age group. This ranking is the same for both males and females. The pattern is also fairly consistent across regions, with this pattern being the most pronounced in the North and the North-east.

TABLE 4.5.6
AGE CHARACTERISTICS OF SEASONAL MIGRANTS
AND THOSE WHO LOOKED FOR A JOB

		AGE					
WHOLE KINGDOM		11-14	15-19	20-29	30-39	40-59	>=60
BOTH SEXES	% MOVERS	13.8	24.9	14.30	22.3	16.3	1.9
	% LOOK FOR JOB	21.4	45.4	36.80	40.0	27.8	4.0
MALE	% MOVERS	13.7	28.4	17.50	28.6	23.9	2.7
	% LOOK FOR JOB	13.7	53.7	46.10	46.7	37.7	4.6
FEMALE	% MOVERS	14.0	19.5	10.20	10.9	7.7	.9
	% LOOK FOR JOB	28.1	32.7	25	27.7	16.6	3.3

This pattern contradicts the view that much of seasonal inactivity can be attributed to the withdrawal of women and children from the labour force during the dry season. One connotation of this view is that women and children are drawn upon to help in the planting and harvesting season, and that once the busy period is over, they just withdraw from the labour force, so that seasonal inactivity is mostly voluntary. We have already seen that women are fairly active in seeking outside jobs during the dry season. Except in the South, the proportion of potential female movers who looked or said they did not know how to look for a job is around 50%. Here we find that the young age group (15-19) is the most active in trying to seek work outside of the village during the dry season. This age group is also the group with the severest problem of seasonal inactivity; the rate of seasonal inactivity is 23.3% of the workforce, compared to 19.8% for 20-29, 16.9% for 30-39, 14.3% for 40-59, and 14.5% for 11-14. Thus, it seems plausible that the reason why the 15-19 years age group is so active in seeking outside work is precisely

because this is the group most affected by seasonal inactivity, and that for them seasonal inactivity is not something they would voluntarily endure; seasonal migration is one way out.

FINDING SEASONAL MIGRATION JOBS

Because seasonal migration is a temporary move to work elsewhere for a few weeks or months, the cost of moving and not finding a job is extremely high. It is therefore not surprising that most migrants have a job waiting for them before they move.

TABLE 4.5.7
PERCENT GETTING JOB BEFORE MOVING

REGION	% GETTING JOB BEFORE MOVING BOTH SEXES
NORTH	71
NORTH-EAST	65
SOUTH	48
CENTRAL	63
TOTAL	65

In the South, around 50% of all movers already are ensure of a job before they move. In the other regions, the proportion is over 60%, with that in the North over 70%. In actual fact, of those who do not have a guaranteed job before they move, most get a job within one week of moving. Thus, just about everybody must be sure of a job before they actually decide to move.

The implication of this is that the flow of information is a most important factor in determining seasonal migration. To be sure of a job, one cannot just move to some destination based on a vague expectation of finding a job there. There must be prior contact either with potential employers, or with friends or relatives who can help in finding a job before the person actually moves. Some employers, especially those in agriculture who need workers at particular times of the year (eg. sugarcane planters) may contract with the workers, or an agent, before hand, and many in the village will be hired almost as a team. In fact, based on a rural credit market study at TDRI, there are clear evidence that employers sometimes resort to lending money to workers at low or zero interest rate as a "tied deal" so that he can be ensured of getting the workers when he needs them.

ECONOMETRIC ESTIMATES OF SEASONAL MIGRATION

To confirm the importance of information flows for seasonal migration, some simple econometric estimates were carried out on the determinants of seasonal migration. We start with a sub-sample of the potential mover population, which excludes those over 60 years old, or those with more than secondary education as no one in this group moved (the sample also does not include those under 11). The dependent variable is whether an individual seasonally migrated or not; equal to 1 if he or she did and 0 otherwise. The independent variables include dummies for region, for education, for relationships to household head. Also included are variables which capture to some extent information flows. These are the number of other persons in the household that moved, and the number of other persons in the village that moved. The latter is entered as the ratio of other persons in the village who moved to the total number of persons in the village. A variable for the total size of the village is also entered to capture possible effects of village size on migration.

A priori, one would expect that if there are many others in the village who move, then within that village information on job availability would be more abundant than in villages where not many people move. If information is an important determinant of seasonal migration, which is what we intuitively expect, and information from within the village is important, then one would expect migrants to be clustered within villages, rather than evenly spread out across villages, i.e. that there would tend to be villages where a lot of people move, and others where hardly any body move. If this pattern holds then the ratio of others in the village who move to the total in the village would be highly correlated to the probability that an individual move.

TABLE 4.5.8
LIST OF VARIABLES FOR PROBIT ESTIMATES
OF SEASONAL MIGRATION

REG2	=	DUMMY FOR NORTH-EAST
REG3	=	DUMMY FOR SOUTH
REG4	=	DUMMY FOR CENTRAL
AGE	=	AGE
EDC2	=	DUMMY FOR COMPLETED ELEMENTARY EDUCATION
EDC3	=	DUMMY FOR COMPLETED SECONDARY EDUCATION
MRCH	=	DUMMY FOR BEING MARRIED CHILD OF HEAD OF HOUSEHOLD
UNMRCH	=	DUMMY FOR BEING UNMARRIED CHILD OF HEAD OF HOUSEHOLD
RELTIVE	=	DUMMY FOR RELATIVE (EXC IMMED FAM) OF HEAD OF HOUSEHOLD
OMHH	=	NUMBER OF OTHER MEMBERS IN HOUSEHOLD THAT MOVE
RATVIL	=	RATIO OF MOVERS (EXCLUDING RESPONDENT) IN VILLAGE
TOTVL	=	NUMBER OF PEOPLE IN VILLAGE

TABLE 4.5.9

PROBIT ANALYSIS OF POTENTIAL MOVERS WHO MOVE : MALES

DEPENDENT VARIABLE : MOVE = 1 --> MOVE
= 0 --> NOT MOVE

Variable	Coefficient	T-ratio	(Sig.Lvl)
CONSTANT	.987700	1.471	(.14132)
REG2	-.113383	-.531	(.59571)
REG3	1.02365	2.105	(.03528)
REG4	.131253	.530	(.59610)
AGE	-.499921E-01	-3.805	(.00014)
EDC2	-.561902	-1.447	(.14794)
EDC3	-1.08609	-1.883	(.05972)
UNMRCH	-1.25780	-4.032	(.00006)
RELTIVE	-4.12160	-4.478	(.00001)
OMHH	.262559	.875	(.38160)
RATVIL	5.99579	4.952	(.00000)
TOTVL	.415272E-01	2.207	(.02731)

Log-Likelihood.....	-136.04
Restricted (Slopes=0) Log-L.	-164.30
Chi-Squared (11).....	56.507
Significance Level.....	.73481E-09

ACTUAL AND PREDICTED MOVES : MALE

		ACTUAL MOVE		
		NO	YES	ALL
PREDICTED	NO	132030	28020	160050
	YES	5496	25943	31439
	ALL	137527	53963	191490

% CORRECT PREDICTIONS = 82.5%

TABLE 4.5.10

PROBIT ANALYSIS OF POTENTIAL MOVERS WHO MOVE : FEMALES

DEPENDENT VARIABLE : MOVE = 1 --> MOVE
= 0 --> NOT MOVE

Variable	Coefficient	T-ratio (Sig.Lvl)
CONSTANT	-.722547	-1.177 (.23916)
REG2	-.284214	-.841 (.40016)
REG3	-.147973	-.218 (.82750)
REG4	.230783	.599 (.54930)
AGE	-.222665E-01	-1.844 (.06515)
EDC3	-1.91975	-1.069 (.28492)
MRCH	-.240097	-.541 (.58853)
OMHH	.731029	1.773 (.07631)
RATVIL	3.47196	2.068 (.03865)
TOTVL	-.216020E-01	-.659 (.50960)

Log-Likelihood.....	-53.202
Restricted (Slopes=0) Log-L.	-134.73
Chi-Squared (9).....	163.06
Significance Level.....	.32173E-13

ACTUAL AND PREDICTED MOVES : FEMALE

		ACTUAL MOVE		
		NO	YES	ALL
PREDICTED	NO	139636	15203	154839
	YES	4883	4488	9371
	ALL	144519	19691	164211

% CORRECT PREDICTIONS = 87.8%

The situation concerning the number of other household members who move is more complicated. First, it is clearly an indicator of the information available to household members on the availability of jobs, so that this should act in the same way as the village level variable. However, if someone in the household is already moving then there may be a need for others to stay behind to look after the household (there were no case of more than two people in a household that move). Thus, this will tend to work in the opposite direction.

Probit estimates were run separately for males and females. The results are given in Tables 4.5.9 and 4.5.10.

First, the model performed fairly well, especially for males. Although the percent of correct predictions were higher for females this is somewhat illusory, because the model under predicted the number of females that moved by quite a lot.

For males, the signs on the age and education variables and the significance levels confirm what we expected from earlier discussions on the age and educational characteristics of movers. It is the younger who are more likely to move, and those with less education. The dummy for being an unmarried child of the head of household is highly significant and negative, so that such an individual is less likely to move. In fact, this may simply capture those who are between 11 and 14, because we saw that this group tends to move less than those between 15 and 19. Thus, while the age coefficient is negative, which by itself would imply that the very youngest are the most likely to move, the dummy for unmarried child, which most children under 15 presumably are, can control for the lower moving probability of the very youngest group. Other household relatives (not direct family members) are also less likely to move. Other relationship indicators were also tries, but turned out not significant.

Of more interest to the information issue is the highly positive sign and significance level of the ratio of others in the village who moved to total number of people in the village. This is strong confirmation that information is of prime importance in the choice of seasonal migration. It also implies that migration tends to be highly clustered within villages, a confirmation of earlier observations of various studies of seasonal migration from particular villages or specific localities, which have documented villages with many migrants being neighbours of villages with almost no migrants. The sign on the total number of people in the village is also positive and significant. This means that, other things the same, larger villages tends to have a higher proportion of migrants. The

number of other household members that move is not significant, but as already mentioned, there are opposite factors working, so it is not surprising.

For females, again the age and education variables have the expected signs. Those who are young and less educated are the most likely to move, although the education variable is not significant. Variables on relationships to the household head are not significant for females. For the information variables, the sign on ratio of others in the village who move is positive and highly significant, as for men. Thus, whether for men or for women, the conclusion is clearly that information flows is a prime determinant of seasonal migration. For women, the number of other household members who move turn out to be significant. Thus, we find that women are more likely to move if someone else in the household is also moving. It may be the case that women are rather afraid of the risks associated with moving to work elsewhere, and they may prefer to move together with another household member.

Generally, what these estimates confirm is that information is a prime determinant of seasonal migration. The more people there are who move from a particular village, the more information there is about job opportunity for those living in the village, and it becomes more probable for others individuals living in the village to also move. This however has an important implication. Over time, there is a built in tendency for the disparities across villages in terms of access to seasonal migration to widen. Those villages who start off with very few or no seasonal migrants will probably continue on with very few seasonal migrants, because information on job opportunities do not flow in. Those with more seasonal migrants to begin with will generate the information for others in the village so that over time more and more people move.

Because seasonal migration is very important in supplementing the income of those with no jobs during the dry season, its accessibility to those who want to move is important. If people generally do not want to move then of course having the information that there are jobs available elsewhere is not very useful. What we have seen, however, is that a high proportion of those who have no work in the place where they live are active in trying to look for a job elsewhere, and many are prevented from doing so because they do not have the information of how to look for a job. This may be an area for the government to explore in thinking about ways to help the rural population improve its situation as it face the decline in labour demand in agriculture in the dry season.

The following summary can be made.

1. It seems clear that those who face the drastic decline in the demand for labour during the dry season are quite active in seeking alternative employment, even away from the village. Many of them do so, and move to work elsewhere. Many others said they do not know how to find a job.

2. The most active group in moving is the 15-19 years old age group. This is evidence against the notion that the young withdraw from the labour force during the dry season, and do not want to work.

3. Information is a prime determinant of seasonal migration. If some people move from a village, then others are likely to follow. The implication is that seasonal migration tends to be concentrated in villages; some villages have many who move, and others with hardly anybody moving.

4. The target for government policy should be to improve information flows. Villages suffering from seasonal inactivity and with very small proportion of seasonal migrants should be the target group for improved information on seasonal job opportunity.

5. Given the clustering of movers within villages, there is a built in tendency for the disparity across villages to increase over time. There is a case for targeting job creation programs to the backward villages.

4.6 POLICY IMPLICATIONS

The previous sections have looked in detailed at some important aspects of agricultural employment. It is clear that the outlook for the vast majority who depend on their livelihood on agriculture is not bright. Over the period of the Sixth Plan,

the demand for labour during the peak agricultural season is expected to increase only by about 0.6% per annum, while the rural workforce is projected to increase by around 2.6%.

Normally, as crop prices changes, with some getting better and others getting worse, we can expect farmers to shift towards the better crops, and this help to cushion the impact of income falls from those crops whose prices fall. Over the next five years, however, even though some crops are expected to show real price increase, the amount is very small, and generally crop prices are expected to be rather depressed, with the possible exception of sugar. Farmers will certainly adjust to these prices, but with prices in generally being fairly depressed this will not be of much help. The shift in cropping pattern is expected to lead to labour demand growing more in the dry season compared to the wet season, but again the average growth rate is about the same as that for the rural labour force, so that the extent of seasonal unemployment is unlikely to improve much. Under such a situation, the demand for government assistance will be even greater than before.

Clearly, if these price projections are not too far off, then, with few exceptions, the major crops are not the answer. The identification of "agricultural diversification" as a policy target in the Sixth Plan seems to be the right approach. Many currently minor activities in agriculture seem to have export potential and could be the longer term future for agriculture in Thailand. However, in terms of their employment impact over the medium term, it is unlikely that they can cushion the slow growth in employment in the major crops sufficiently over the next 5 years, because their employment base is very small.

Rural off-farm activities is another possible answer (see eg. Onchan, Charsombut and Mead: Report on the Rural Off-Farm Employment Assessment Project). However, many of these are agriculturally linked, and for such things as services or small scale industries, the major consumers are the rural population themselves, so that their prosperity depends upon income growths in agriculture to a large extent.

What one can expect is that if the depressed situation with the major crops prevails over many years, there will be an accelerated move from the rural sector through migration. To some extent the population changes that have occurred in the past is something that one can be thankful for. Over the next 20 years, the dependency ratio is expected to fall very fast. This means that to each adult worker, there will be less children to feed (although the share of the older population will also

increase). Over the next 20 years, however, it will probably be the population movements that dominate the picture on population changes, and development planning must take this into account.

In terms of dry season employment, the pattern and impediments to seasonal migration also point to key roles for the government. If the impact of information constraints to seasonal migration is to contribute to the disparities between villages and areas within the rural sector, then it is the backward areas where help should be targeted. Information flows could be improved, and government programs that are desired to help with rural employment should be target to these areas.

Following on from the last point, it is possible to say something about the observed target of the government Rural Job Creation Program. In the questionnaires from which the seasonal migration data were derived, people were also asked whether they participated in the Rural Job Creation Program. This was added on because the Program absorbs a significant amount of resources, around 300-400 million baht annually; is targeted at a large number of people (over 1 million); and should help ease the rural hardship during the dry season. The only aim here is to see whether one can say something about the success of the program in reaching those in real need, taken into account what we have learned about the labour market situation in the rural area from the above analyses of the seasonal migration problem.

In total, from the survey it is found that around 1,500,000 people participated in the program in 1984. To analyze the pattern of participation, a probit estimates were run on participants in the program versus non-participants. The sample chosen includes only those who are in the labour force who did not move to work elsewhere. The variables and the final result are given below.

TABLE 4.5.10
LIST OF VARIABLES FOR PROBIT ESTIMATES
OF PARTICIPATION IN RURAL JOB CREATION PROGRAM

REG2	=	DUMMY FOR NORTH-EAST
AGE	=	AGE
SEXM	=	DUMMY FOR MALE
EDC23	=	DUMMY FOR ELEMENTARY OR SECONDARY EDUCATION
WORK	=	DUMMY FOR THOSE WHO HAVE A JOB
HEADH	=	DUMMY FOR HEAD OF HOUSEHOLD
OMHH	=	NUMBER OF OTHER MEMBERS IN HOUSEHOLD THAT MOVE
RATVIL	=	RATIO OF MOVERS (EXCLUDING RESPONDENT) IN VILLAGE
TOTVL	=	NUMBER OF PEOPLE IN VILLAGE

TABLE 4.5.11

PROBIT ANALYSIS OF THOSE WHO PARTICIPATE IN
THE RURAL JOB CREATION PROGRAM

DEPENDENT VARIABLE : PARTIC = 1 --> PARTICIPATED
= 0 --> NOT PARTICIPATED

Variable	Coefficient	T-ratio	(Sig.Lvl)
ONE	-2.51666	-5.674	(.00000)
REG2	1.18570	7.561	(.00000)
WORK	-.451143	-2.604	(.00920)
SEXM	.822683	4.981	(.00000)
AGE	-.118634E-02	-.168	(.86663)
EDC23	.489765	1.811	(.07008)
HEADH	.205690	1.052	(.29268)
OMHH	-.936373	-2.070	(.03843)
RATVIL	3.57885	3.212	(.00132)
TOTVL	-.192502E-01	-1.296	(.19489)

Log-Likelihood.....	-211.63
Restricted (Slopes=0) Log-L.	-220.51
Chi-Squared (9).....	17.757
Significance Level.....	.38101E-01

Over all, the result is very interesting, and shows that, in terms of helping to improve the condition of the rural population during the dry season, the pattern of participation shows mixed success. The following main conclusions can be drawn from the estimates.

1. Those who are males and in the North-east are more likely to participate in the program. The fact that the program appears to be more intensive in the North-east is a good sign, as this is the region most affected by seasonal inactivity, and also the region where the proportion of seasonal migrants to potential movers is lowest.

2. Those who already have a job are less likely to participate. While obviously those who are already working will have less time in which to participate, it is nevertheless reassuring to know that the Program is reaching those who are seasonally inactive, i.e. those in the labour force who do not have jobs and did not move the work elsewhere at all.

3. If other members of the household has moved to work elsewhere, then the household member is less likely to participate. Again this shows that the program is spreading the benefit to those families who may face particular hardship because of the lack of opportunity to move elsewhere to work and supplement the family income.

4. The Program is not sufficiently intensive in villages which needs it most. The result shows that an individual is more likely to participate in the Program if the person lives in villages where a high proportion of people is able to move to work elsewhere, compared to if the individual lives in a village where very few people are able to move. The latter villages are however where the seasonal inactivity problem is more severe.

The basic conclusion is that within a particular village the program seems to be reaching the right people, i.e. those without other work, and those family with little seasonal migration. On the other hand, in terms of the pattern across villages, the situation needs to be improved. The program should

be more targeted towards the backward villages, with little seasonal migration, to compensate for the built in tendency of the information flow pattern to lead to a widening gap between villages. The current observed pattern is for the Rural Job Creation Program to contribute to the disparity across villages, and this should be rectified for the Program to have most impact.

CHAPTER 5

LABOUR MARKET SEGMENTATION

AND

OPEN UNEMPLOYMENT

5.1 INTRODUCTION

Chapter 4 examined the demand for labour in agriculture, and the seasonal pattern involved. Agriculture employs about 70% of the labour force at the present time, and is therefore important to the employment prospects for the majority of the Thai workforce. However, another issue which is of equal concern to policy makers is that of open unemployment. This should be distinguished from the seasonal unemployment problem that was discussed in the last chapter. That problem was related to the seasonal variation in the pattern of demand for labour in agriculture. Open unemployment is a problem one normally associates with the urban areas, and in the case of Thailand, those with better educational qualifications. This chapter turns to look at this issue. It explores the notion of labour market segmentation, which is crucial to an understanding of the open unemployment problem. A picture of how the urban labour market in Thailand operates is presented, together with the implication of this picture for the open unemployment prospects in the future.

5.2 CONCEPTUAL BACKGROUND

To understand open unemployment, it is necessary to understand the structure and operation of the labour market. The fact that a large number of people cannot obtain jobs signify some form of market failure. In more developed countries, there are two major lines of thought on the fundamental cause of open unemployment. First, is the classical view that open unemployment stems from rigidity in wages, leading to a wage that is too high, and also a wage structure that does not reflect the relative marginal product of labour in different industries and occupations. This view would lead one to examine the reasons for wage rigidity, and identify policies that would make wage adjustments more indicative of demand and supply. The major cause of wage rigidity that has been identified and studied is the presence and strength of trade unions. By contrast, the

second view on open unemployment, the Keynesian school, plays down the importance of wage rigidity, and instead suggest that open unemployment depends on the level of effective demand in product markets. This latter view would suggest government stimulation of effective demand as the cure for unemployment.

In fact, more recently, with the attempts to integrate Keynesian and Neo-classical economics, it is increasing clear that the ideas underlying each school of thought are both relevant, rather than competing. If wages are perfectly flexible in the special sense that it will always adjust to the level that will equate demand and supply, then it is unclear that a lack of effect demand alone will lead to open unemployment. Any manifestation of excess supply will drive down wages, and, ceteris paribus, will tend to increase the demand for labour. In actual practice, the debates concerning did not matter too much, because for over twenty years starting at the end of the Second World War, the Western Economies, through Keynesian demand management, enjoyed a period of prosperity and low unemployment unmatched in history.

More recently, with the Western economies experiencing high unemployment and inflation, and lower growth, and with the increasing importance of the Less Developed Countries in the world arena, economists are once again turning increasing attention to the issue of open unemployment. Nowadays, the approach to understanding unemployment has of course become much more sophisticated than in the past, with many new concepts available to economists, such as Search Unemployment, Segmented (or Dual) Labour Market, Flexible but Non Market-Clearing Wage Determining Mechanisms, Job-Employee Matching, Job Ladders, and so forth. However, it is still fairly accurate to say that as far as policy makers are concerned, the crux of the matter has not changed that much:- first, how to generate sufficient demand to absorb the supply of labour seeking work (the Keynesian idea), and second, how to ensure that the labour market operates in a way that is responsive to changing labour market conditions (the Classical idea).

As far as the open unemployment problem in Thailand is concerned, the ideas underlying the determinants of open unemployment has to be supplemented by the specific institutional features of the Thai labour market. The most important concept, which is also applicable to many Less Developed Countries, is the idea of **Labour Market Segmentation**. According to this view, the labour market can broadly be divided into two parts:- the **FORMAL** and the **INFORMAL** sectors. This division refers not so much to a physical or geographical division of the labour market, but rather a conceptual distinction in the way these two labour market operates. Even in more developed economies, the idea of

labour market dualism is now catching on in connection with the attempt to understand labour market imperfections. Briefly, the differences can be described as follows:-

1. FORMAL SECTOR. The important feature of the formal labour market is that wages are not determined according to the standard text-book demand and supply analysis. Entry is difficult, but those with access can earn more than what they would get in the informal sectors, and job security is better. In practice, this sector is composed of the government sector, where wages are policy variables rather than market determined; the relatively large firms, where there may be important considerations relevant to its own internal organization, such as the need for specific training of its workers, which can lead to the firm paying a wage higher than the market clearing wage; or sectors where unionization is strong, keeping the wage level high.

2. INFORMAL SECTOR. In this sector, entry is easy, but wages are low and there is little job security. Wages adjust to clear the market, and workers may have to share jobs by each working for less hours. The sector is made up mostly of small firms, and also includes most of the self-employed such as hawkers and peddlers, but excluding the major professions such as doctors or lawyers. The key to the informal sector is that it can act as the employer of last resort for those who cannot get jobs in the formal sector, should they want to take up an informal sector job.

It should be stressed that the distinction between FORMAL and INFORMAL is a conceptual one, except in cases such as government employment where it is clear that the job is not market determined. However, the distinction appears to have some empirical support from studies that have been and are being carried out in a number of countries (both LDC's and developed).

This chapter is an attempt to study the issue of labour market segmentation in the Thai economy, and the implication it has for the prospects on open unemployment. This latter problem is particularly relevant at the present time, as many people feel that employment problems may be the most crucial problem over the next few years, especially as other macro issues such as debt management may become less crucial (though still important) assuming that oil prices remain low.

The next section starts by briefly reviewing some salient features of the open unemployment problem. In section 5.4, a picture of the labour market segmentation in Thailand is presented. Several new findings are reported in connection with new data that are available to shed more light on the segmentation problem. These new information are the result of a joint World Bank-NSO-NESDB project to collect additional data in the July-September round of the 1984 Labour Force Survey, and the materials on seasonal migration in Chapter 4 were drawn from this source. In the section 5.5, the findings are then integrated to look at the prospects for open unemployment in the future.

5.3 PAST TRENDS ON OPEN UNEMPLOYMENT

Examining the past data on open unemployment has to be done with care. One reason is that the National Statistical Office has changed the definition of open unemployment a number of times in the last few years. The second has to do with the fact that, given any particular definition, there are more openly unemployed during the dry season than in the peak agricultural season, though for open unemployment, the variation is not any where near as great as with seasonal unemployment. In this Chapter, the discussion will focus exclusively on the period during the peak agricultural season, and will draw on the data from the July-September rounds of the Labour Force Survey, because the dry season employment situation was already covered in the last Chapter.

One major change has taken place in the definition of open unemployment since 1983. Prior to 1983, the openly unemployed included those who did not work during the survey week, and either looked for work in the survey week, or would have looked for work if they were not ill or thought that there were work available. In 1983, the definition was broadened to include those who did not look for work, but reported that they were available and willing to work.

This change in the definition, including as part of the openly unemployed those who said that they are available and willing to work, has come under a great deal of debate, particularly regarding the fact that if someone says that he or she is available for work, it is not clear about the rate of remuneration at which the person would be willing to work. Thus,

the person may have an unrealistically high expectation and may more appropriately be classified as voluntarily unemployed because the going market wage is too low.

The change in concept in 1983 is the response to the dis-satisfaction with the very narrow concept of open unemployment used earlier. In a labour market which is not all that organized such as the Thai labour market, using a reference period for looking for work of only one week is much too short. In developed countries, where the unemployed gets unemployment benefits and there are well developed labour exchanges, one can expect an unemployed individual to register at the labour exchange, and in effect look for a job. Those who do not, and are willing to forego unemployment benefits, can be regarded quite reasonably as being voluntarily unemployed. The situation is very different in a country like Thailand, where the family is the prime source of finance during unemployment, and presumably one does not have to register anywhere to get this assistance. Also, many people do not find jobs through any labour exchange, but through friends or relatives. Thus, the idea that a person must be looking for a job in the survey week before being classified as openly unemployed is most inappropriate. While "willingness to work" is probably much too vague to be useful, one can probably safely say that the "correct" level of open unemployment (if there is such a thing) probably lies between the level of those who actually look for work in the survey week (or even in the past month) and the level which includes the notion of "willing to work but did not look for work".

TABLE 5.3.1

NUMBERS OF UNEMPLOYED FOR THOSE WHO LOOKED FOR WORK
AND THOSE WHO DID NOT LOOK BUT ARE "AVAILABLE" FOR WORK
(LABOUR FORCE SURVEY, JULY-SEPTEMBER 1984)

	TOTAL	PRIMARY AND BELOW	SECONDARY	VOCATIONAL	TEACHER TRAINING	UNIVERSITY	UNKNOWN
MUNICIPAL							
LOOK FOR WORK	106,000	35,600	24,500	34,300	2,600	8,900	100
AVAILABLE	37,800	16,800	9,200	7,200	1,500	3,100	0
TOTAL	143,800	52,400	33,700	41,500	4,100	12,000	100
NON-MUNICIPAL							
LOOK FOR WORK	147,800	59,700	23,300	46,000	14,700	3,500	600
AVAILABLE	315,700	276,300	13,700	15,200	9,300	1,200	0
TOTAL	463,500	336,000	37,000	61,200	24,000	4,700	600
BOTH AREAS							
LOOK FOR WORK	255,500	97,000	47,800	80,300	17,300	12,400	700
AVAILABLE	351,800	291,400	22,900	22,400	10,800	4,300	0
TOTAL	607,300	386700	70,700	102,700	28,100	16,700	700

Table 5.3.1 shows the numbers of unemployed according to the two concepts of open unemployment for July-September 1984, broken down by municipal non-municipal, and by educational levels. In sum, 253,800 were unemployed according to the old definition of "looking for work", and 353,500 did not looked for work, but said they were available for work. The latter is in fact more than the former, and including both concepts yields an open unemployment figure of 607,300. Thus, the new definition increases the numbers regarded as openly unemployed by more than 100%. However, it can be seen clearly that the impact of the change in the definition is much more important in the non-municipal areas. In municipal areas, those "available for work" comes to about 35% of those looking for work, but in non-municipal areas, there are more than twice as many of those "available for work" as those looking for work.

Even in non-municipal areas, it is the extent of open unemployment of those with elementary education and below which is most affected by the new definition. For those with secondary education and above, the "available" group is about 45% of the

"looking for work" group, but for those with elementary education and below, there are more than four and a half times as many "available" as "looking for work".

In fact, in recent years, the problem of open unemployment is really a problem of **educated** open unemployment, so the change in definition will not matter too much in terms of judging the extent of the problem. In looking at the trends, we will have to rely on the old definition, as it is possible to get comparable figures for those unemployed "looking for work" from the surveys since 1983, but there are no figures for those "available but not looking for work" for earlier years.

The recent trends in open unemployment (using the definition prior to 1983) during the peak agricultural season (July-September) is given in Table 5.3.2, broken down by educational levels. The table divides up the total unemployed by levels of education; those with primary education and below (<=PRIMARY), those with secondary education (SECONDARY), with vocational education (VOCATIONAL), with teacher training (TEACHER), and those with university education (UNIVERSITY).

TABLE 5.3.2
UNEMPLOYED LOOKING FOR WORK IN SURVEY WEEK 1977-1984
LABOUR FORCE SURVEY : JULY-SEPTEMBER

YEAR	<=PRIMARY	SECONDARY	VOCATIONAL	TEACHER	UNIVERSITY	TOTAL
1977	62,500	31,100	17,100	13,000	6,200	129,900
1978	52,600	37,200	17,500	15,000	6,900	129,300
1979	74,000	43,500	25,800	15,700	5,900	165,300
1980	90,400	37,900	28,000	12,300	6,700	176,900
1981	94,000	40,600	34,300	8,800	15,400	193,100
1982	181,700	50,800	57,400	12,100	13,600	315,900
1983	141,800	41,200	46,700	12,000	14,600	256,300
1984	97,700	47,800	80,300	17,300	12,400	255,500

As can be seen from the table, except for 1984, over half of the openly unemployed are made up from those with only primary education or below. This should not be surprising since almost 90% of all workers in Thailand have only primary education or below, and should not lead one to believe that the problem of open unemployment is one of the less well educated. In fact, the situation is the opposite.

TABLE 5.3.3
UNEMPLOYMENT RATES OF THOSE LOOKING FOR WORK IN SURVEY WEEK
1977-1984
LABOUR FORCE SURVEY : JULY-SEPTEMBER

YEAR	<=PRIMARY	SECONDARY	VOCATIONAL	TEACHER	UNIVERSITY	TOTAL
1977	.33%	3.72%	7.11%	5.14%	3.81%	.63%
1978	.26%	3.86%	7.02%	5.07%	3.69%	.59%
1979	.38%	4.48%	8.67%	4.77%	2.50%	.77%
1980	.43%	3.57%	8.74%	3.43%	2.65%	.77%
1981	.42%	3.31%	8.44%	2.10%	4.94%	.78%
1982	.79%	3.70%	11.91%	2.31%	3.92%	1.23%
1983	.64%	2.88%	8.81%	2.11%	2.99%	1.01%
1984	.43%	3.19%	12.65%	3.19%	2.78%	.97%

Table 5.3.3 gives the unemployment rates (based on the above definition). It can be seen that the open unemployment rate (the ratio of the openly unemployed divided by the total work-force, which includes those with jobs and those who are unemployed) is only around 1%, with the rate for those with primary education and below only around half a percent. The group with the highest open unemployment rate is that with vocational education, with an open unemployment rate of about 7% in 1977 and about 12.5% in 1984. The other groups have about the same rates of open unemployment of around 3-4%.

TABLE 5.3.4
UNEMPLOYMENT RATES BY AREA
1977-1984
LABOUR FORCE SURVEY : JULY-SEPTEMBER

MUNICIPAL AREAS

YEAR	<=PRIMARY	SECONDARY	VOCATIONAL	TEACHER	UNIVERSITY	TOTAL
1977	1.32%	3.17%	7.60%	4.54%	4.18%	2.26%
1978	1.50%	2.94%	5.98%	4.67%	3.74%	2.26%
1979	1.76%	4.24%	9.10%	3.92%	2.84%	2.76%
1980	1.97%	4.03%	7.45%	3.03%	3.13%	2.76%
1981	1.93%	3.33%	7.25%	2.75%	4.42%	2.79%
1982	2.67%	5.22%	9.67%	1.89%	4.50%	3.76%
1983	1.86%	3.19%	7.59%	2.48%	3.77%	2.75%
1984	1.80%	4.02%	10.67%	1.98%	2.84%	3.10%

NON-MUNICIPAL AREAS

YEAR	<=PRIMARY	SECONDARY	VOCATIONAL	TEACHER	UNIVERSITY	TOTAL
1977	.22%	4.32%	6.05%	5.42%	1.89%	.39%
1978	.13%	4.77%	9.85%	5.26%	3.45%	.34%
1979	.22%	4.69%	7.87%	5.15%	1.41%	.45%
1980	.26%	3.13%	11.13%	3.62%	1.15%	.45%
1981	.27%	3.29%	10.31%	1.87%	7.11%	.48%
1982	.60%	2.61%	14.66%	2.44%	2.34%	.85%
1983	.52%	2.67%	10.19%	2.00%	1.57%	.74%
1984	.29%	2.63%	14.67%	3.58%	2.62%	.65%

We can also look at the difference between the municipal areas and the non-municipal areas. Table 5.3.4 shows the rates of open unemployment (using the pre-1983 definition) by areas. First, it is clear that the open unemployment rate is much higher in the municipal areas. In fact since about 1980, the only group with more serious unemployment problem in the non-municipal area is the group with vocational education. For teachers, the average rate since 1980 is about the same in the two areas, and for the rest, the rates are higher in the municipal areas.

Table 5.3.5 shows that the number of those openly unemployed has been increasing rapidly. Two sets of growth rates are given, one set excludes the years 1982 and 1983 from the calculations. The reason is that if one looks at the unemployment figures for these two years, there appeared to be a big jump. While some of this may be explained by the fact that in 1982 the economy was rather depressed, some of it must be

attributed to adjustments in the NSO survey methodology, as during that time they were in the process of rethinking about the concept of open unemployment and changing the definitions via new questionnaires. Actually, using either set, the pattern is similar. The group with the fastest growth in unemployment are those with vocational education, with the university graduates as the next group, followed by those with less than primary education.

TABLE 5.3.5
AVERAGE GROWTH OF OPEN UNEMPLOYMENT 1977-1984

	PERCENT/YEAR	PERCENT/YEAR (EXC 1982-3)
LE PRIMARY	12.90%	8.30%
SECONDARY	4.80	5.00%
VOCATIONAL	21.80	22.50%
TEACHER	-.00	.01%
UNIVERSITY	14.20	12.30%
TOTAL	12.10	10.20%

NOTE: Based on log regressions of unemployment figures

The average growth in total unemployment has been around 10-12% per annum, and from tables 5.3.3 and 5.3.4 one can see that this has lead to clear upward trends in the rates of open unemployment. For the university graduates, while the growth in unemployment has been rather fast, the unemployment rates have been fairly stable since 1979, so employment of these types of workers have also been growing fast. The group with vocational education gives the most cause for concern. One can see that they have the highest unemployment rate, and their unemployment rate have been rising, so that employment has not been able to keep up with the supply. In 1984, the numbers of unemployed with vocational education is about equal to the sum of the unemployed with secondary, university and teacher training combined. If the fast growth in their unemployment rate continues, very soon they will make up almost half of the pool of open unemployment.

EMPLOYMENT PATTERNS

The last part gave the general picture on the levels, rates and trends of open unemployment. In order to better understand the problem concerning open unemployment, one has to examine the pattern of employment.

At the present time, Thailand is undergoing a transition facing many developing countries where the structure of the labour force is rapidly changing. As far as the recent experience of Thailand is concerned, the shift of workers out off agriculture is occurring at a less rapid pace than the decline in importance of agriculture in the economy. However, concerning the educational dimension, the structure of the labour force is changing at a rapid rate.

Table 5.3.6 gives the employment structure by educational level between 1972 and 1984, together with the average growth rates and the shares. On average, total employment grew at a rate of 4.73% per annum between 1972 and 1977, and at 3.6% between 1977 and 1984. In both periods, the growth rates of those with primary education and below was less than the average for the total labour force. However, for each of the other educational category, the average growth rate was larger than that for the total labour force. Between 1972 and 1977, the two groups with the fastest rates of growth were those with technical education and those with university education. The former grew on average 13.68% per annum, while the latter increased at 22.65% per annum. Those with teacher training grew at around 9.35% per annum, while those with secondary education grew at 6.61% per annum. In the period between 1977 and 1984, the pattern is still similar. The university graduates still grew the fastest, but the rate has slowed down, and is now similar to the vocational group, whose rate of growth was about the same as in the earlier period. Both the teachers and those with secondary education grew faster before, the former at 12.6% compared with 9.35%, and the latter at 8.8% compared with 6.6%.

As a result of the rapid increase in employment of all the groups with more than primary education, the shares of these workers have increased. Whereas in 1972, just over 5% of all workers have more than primary education, this figure has risen to over 12% in 1982.

TABLE 5.3.6
TREND OF EMPLOYMENT BY EDUCATION : (1972-1984)
LABOUR FORCE SURVEY : ROUND 2

	1972	1977	1984
PRIM AND BELOW	15,208,310	18,884,500	22,839,226
SECONDARY	583,050	803,100	1,448,770
VOCATIONAL	115,260	218,800	554,562
TEACHER	153,280	239,600	524,750
UNIVERSITY	56,420	156,600	434,412
TOTAL	16,116,320	20,302,600	25,998,934

AVERAGE GROWTH PER ANNUM

	1972-77	1977-84
PRIM AND BELOW	4.43%	2.70%
SECONDARY	6.61%	8.80%
VOCATIONAL	13.68%	13.80%
TEACHER	9.35%	12.60%
UNIVERSITY	22.65%	15.80%
TOTAL	4.73%	3.60%

SHARE

	1972	1977	1984
PRIM AND BELOW	94.37%	93.02%	87.85%
SECONDARY	3.62%	3.96%	5.57%
VOCATIONAL	.72%	1.08%	2.13%
TEACHER	.95%	1.18%	2.02%
UNIVERSITY	.35%	.77%	1.67%
TOTAL	100.00%	100.00%	100.00%

Given that the educational pattern of employment has undergone rapid changes, it is useful to look at the pattern of employment by sectors and work status, broken down by education. Table 5.3.7 gives such a break down for 1984. Total employment is broken down along three dimensions:-

1. SECTORS: Three sectors are distinguished; Primary (Agriculture and Mining), Industries, and Services.

2. WORK STATUS: The distinction is between Private (Employees and Employers), Government (including State Enterprises), and Own-Account Workers (including unpaid family workers).

3. EDUCATION: Two groups are separated out; those with primary education and below (BE SE) and those with more than primary education (OV SE).

TABLE 5.3.7
EMPLOYMENT BY AGGREGATED SECTORS AND BY EDUCATION: 1984
LABOUR FORCE SURVEY : JULY-SEPTEMBER

		PRIMARY	INDUSTRY	SERVICE	TOTAL
PRIVATE	BE SE	1,785,346	1,484,414	946,022	4,215,782
	OV SE	40,031	268,584	512,123	820,738
	TOTAL	1,825,377	1,752,998	1,458,145	5,036,520
GOVERN	BE SE	24,320	60,504	356,234	441,058
	OV SE	5,762	110,638	1,119,117	1,235,517
	TOTAL	30,082	171,142	1,475,351	1,676,575
OWN-ACC	BE SE	15,891,862	644,629	1,843,109	18,379,600
	OV SE	500,363	81,396	324,480	906,239
	TOTAL	16,392,225	726,025	2,167,589	19,285,839
TOTAL	BE SE	17,701,528	2,189,547	3,145,365	23,036,440
	OV SE	546,156	460,618	1,955,720	2,962,494
	TOTAL	18,247,684	2,650,165	5,101,085	25,998,934

NOTE: BE SE refers to those with primary education and below
OV SE to those with secondary education or above

From the table, the figures shows that in 1984 total employment amounts to 25,998,934 persons, of which 2,962,494 have more than primary education, or 11.4% of the total. Most of the workers are Own-account workers (Self Employed), making up 74.2%. However, among the Own-account workers, only 906,239 out of 19,285,839 or 4.7% have more than primary education. By far the most important source of employment for those with more than primary education is the government. The Public sector (including State Enterprises) employs 1,676,575 persons, around

20% of whom are in State Enterprises, but of the total one and a half million odd Public Employees, the proportion of those with secondary education and above is extremely high, amounting to 1,235,517 or 73.7% of the total. In contrast, the proportion of workers with secondary education and above employed by the Private sector (excluding the Own-account workers) is only 16.3%. In total, of all the workers with secondary education and above in Thailand, 41.7% are in the Public sector.

Looking at the educational distribution across sectors of employment reveals the same story. The Primary industries has a very low proportion of workers with more than primary education, because most of its workers are Own-account workers. Industries draws 17.4% of its workers from the group with more than primary education, and the figure for Services is 38.3%, which is much larger because a lot of workers in services are in the government. It is possible to separate out Government services from the rest, in which case the proportion of workers with secondary education or above in private services is 22.8%. In Government services, however, over 75% of all workers have secondary education and above.

This table clearly reveals the predominant influence of the Public sector on the employment prospects of those with middle to upper levels of education. It seems clear that the past high growth of educated labour supply have been met mostly by an expansion in Government employment. This is confirmed by Table 5.3.8 which shows that between 1977 and 1984 the Public Sector employees (including State Enterprises) had the highest average rate of employment growth compared to the Private sector and the Own-account workers. Public Sector employment growth expanded on average 9.5% per year compared with total employment growth of 3.6% per year. The Own-account workers expanded by only 2.6% a year, and the Private sector by 6.8% per year.

TABLE 5.3.8
EMPLOYMENT BY WORK STATUS : 1977-1984

	PRIVATE	GOVERNMENT	OWNACCOUNT	TOTAL
1977	944,697	3,074,846	16,380,709	20,400,252
1978	1,020,528	3,573,426	17,213,883	21,807,837
1979	1,132,581	3,834,537	16,410,665	21,377,783
1980	1,189,559	4,007,825	17,483,447	22,680,831
1981	1,390,204	4,300,232	19,021,650	24,712,086
1982	1,598,359	5,043,985	18,726,923	25,369,267
1983	1,780,834	4,724,048	18,678,645	25,183,527
1984	1,676,575	5,036,520	19,285,839	25,998,934

AVERAGE GROWTH 1977-1984

PRIVATE	6.8%
GOVERNMENT	9.5%
OWNACCOUNT	2.6%
TOTAL	3.6%

A situation in which the Public Sector plays such a crucial role in the employment of the better educated in Thailand is not a healthy one.

First, the dominant role of the Public Sector for educated employment certainly creates a distortion in the relative remunerations among the educated and between the educated and the less educated. Government wage structures are notoriously rigid and not particularly responsive to the dictates of supply and demand. It seems clear that if the Public Sector had not absorbed the bulk of the educated labour supply, the wage differential between the better educated and the less educated would change by much more than what we observe.

Table 5.3.9 shows the trends in relative wage over time by educational groups. It seems from the table that the relative wage of those with vocational, teacher training, and university education compared to those with primary education or below hardly changed between 1978 and 1984, although due to sampling variations there are variations from year to year (the wage data in the 1977 Labour Force Survey, which is the first year that information on wages were asked, are very noisy, so we start from 1978). If we look at the growth of government employment by the same educational categories in Table 5.3.10, we find that public sector employment has been fastest for university educated workers, at an average annual rate of 17% per annum between 1977

and 1984. The groups with vocational and teacher training education also show very fast public employment growth, at around 13% per annum. Those with secondary education and below grew by

TABLE 5.3.9

RELATIVE WAGES BY EDUCATIONAL LEVELS : 1978-1984
(PRIMARY = 100)

YEAR	<=PRIM	SECON	VOCAT	TEACH	UNIVER
1978	100	151	171	176	281
1979	100	152	188	176	295
1980	100	150	183	184	307
1981	100	148	174	163	288
1982	100	148	187	191	280
1983	100	145	176	188	291
1984	100	136	172	172	269

TABLE 5.3.10

GROWTH OF GOVERNMENT EMPLOYMENT
BY EDUCATIONAL LEVELS
(1977-1984)

	PERCENT PER ANNUM
<= PRIMARY	4.6
SECONDARY	5.8
VOCATIONAL	13.0
TEACHER	13.3
UNIVERSITY	17.0
TOTAL	9.5

NOTE: Based on log regressions of public sector employment

much less, at 5.8% and 4.6% per annum respectively. If one compares this with the average growth of employment by educational levels in table 5.3.6, it can be seen that government employment at the university and teacher training levels grew faster that total employment (government and private) for these groups. This is also true for those with primary education and

below. That for the group with vocational education grew at a rate about 0.8% less in the public sector than for total employment. For those with secondary education, however, public employment growth is much slower than for total employment growth, 5.8% per annum for the public sector, compared to 8.8% for total employment. What these data seem to suggest is that the relatively slow public employment growth for those with secondary education is one important reason contributing to the worsening in wage differential for this group compared to the others. For those with university education and teacher training, the rapid rate of increase in government employment help kept the unemployment rate for these groups fairly stable, or with a declining trend (see Table 5.3.3). This enable these group to maintain is wage differential with respect to the less educated group over a period when there has been rapid change in the educational composition of the work force. For those with vocational education, the rate of growth of public emloyment is slightly below that for total employment, and this had the effect of leading to an upward trend in the open unemployment rate for them. However, in terms of their wage differential with respect to those with elementary education or below, the trend is not clear, and appears to be relatively stable. That this remains the case even though unemployment rates for the vocational group is the highest and seems to be rising is related to the way the labour market works, and the nature of segmentation in the market, and this will be examined in the next section.

The fact that government employment helped to keep the wage differentials for the various educated group fairly stable except for those with secondary education, where government employment grew relatively slowly, probably contributed to a distortion in the returns to education for the various levels of education. The government itself pays a higher average wage than the private sector for all levels education except at the university level (from Labour Force Survey data). By having a high demand for the better educated group, it also helped to keep up the wages of these workers in the private sector. This becomes a vicious circle, because a distortion increasing the relative returns to education tends to increase the demand for education, which has to be met for political reasons. This generates further excess supply in the numbers of workers with education, which, if the Government continues to absorb, will perpetuate the distortion etc.. Apart from this, the rigidity in government wage structures have also created shortages in key skilled areas, while there is general excess in educated labour supply.

A second reason why the extreme importance of the government (particularly the Central and Local government) for the employment of the better educated is not healthy is because, under the present climate, it puts tremendous pressure on the

Government Budget. Currently, around 48% of all Government revenues has to be spent on wages and salaries (see Table 5.3.11). This gives little leeway for the government to control the budget deficit at a time when it is finding that revenue collection is difficult, and poor economic performance may require further boosts from government expenditures to help alleviate the situation.

TABLE 5.3.11
GOVERNMENT BUDGET
(MILLIONS OF BAHT)

	FY'86
EXPENDITURES	
Investments	34,267
Personnel	80,416
Debt Servicing	46,835
Others	50,132
TOTAL EXPENDITUR	211,650
REVENUE	168,100
BUDGET DEFICIT	43,550

In conclusion, this section has clearly shown that the work force in Thailand is undergoing rapid change towards a better educated work-force. This in itself seems to be a good thing, in that education is by itself desirable, and also makes for a work force that is more amenable to training in the kinds of skills that are necessary for industrialization. However, the fact that the employment prospects of the better educated has been so intimately tied to the ability to obtain government employment is not. Given that it is unlikely for the government to increase the 2% ceiling on hiring in the near future due to financial pressures, it falls on the private sector to absorb the new educated workers coming on to the market. It is here that the idea of labour market segmentation is relevant. In a situation where labour markets works near the competitive fashion, the excess supply of the better educated, particularly those with vocational education, should lead to wage adjustments so that supply can be absorbed. In a segmented labour market, this needs not be the cases. Wages can remain well above the market clearing level, and demand for labour in the formal sector is rationed. (As already discussed, this may have been the

situation with the group with vocational education) If this is the case, then either the better educated will have to content themselves with finding informal sector jobs, or unemployment will go on increasing fast.

In the next section, we begin to explore the idea of labour market segmentation.

5.4 LABOUR MARKET SEGMENTATION

INTRODUCTION

The key conceptual distinction between the formal and the informal sectors is that in the formal sector wages do not completely respond to market forces, and some workers who want to work in the formal sector at the going wage cannot get in and are rationed out. Thus, there is a rent from being able to get into the formal sector. In the informal sector, on the other hand, if a worker wants to go into it, then he or she can, and the wage in this sector is assumed to be much more responsive to the forces of supply and demand. If more and more people want to get in then the wage will fall, resulting in an increase in demand to absorb the workers.

The reason why an understanding of labour market segmentation is important to an understanding of the open unemployment problem, is that because of segmentation, there is an implicit rent from being able to get a formal sector job. This makes it worthwhile for a worker who cannot get into the formal sector to queue up for a formal sector job, because if he can get in, the wage he can get will be higher, and possibly much higher than what he could earn in the informal sector. This is not to suggest that other factors are not relevant to the determination of open unemployment. For example, there may simply be frictions in the labour market, so that workers needs time to find a job, or there may be a lack of information, as in the seasonal migration case. Thus, even in planned economies, where theoretically there are jobs for everyone, there is still some frictional unemployment, simply because it takes some time for a job to be found; there may be jobs but not suited to the individual, or they may be in the wrong location etc.. In Thailand, it is unlikely to be the case that the problem of open unemployment is a problem of frictional unemployment. The reason is that one would expect frictional unemployment to be equally severe for workers at all educational levels, and as we have seen clearly in the earlier sections, the educated group, particularly those with vocational education are the group hardest hit by open unemployment. What will be suggested here is that the open unemployment problem, particularly for the educated group, is intimately tied to the fact that they can earn a significant rent by being able to get into the formal sector.

Questions might be raised at this point as to why those who cannot get into the formal sector at a particular point in time not go and work in the informal sector while waiting to get into the formal sector. Clearly, some of them do. But for many, especially those with relatively high levels of education, the

types of work available in the informal sector might be looked down upon as being of low status. They may expected that education should be rewarded, and in the past they were certainly more than justified in this belief, because the government had played the major role in providing jobs for the better educated workers. Also, they are able to finance, or rather their families are able to finance, the period of unemployment. In fact very few unemployed individuals have to resort to borrowing money (and pay back) to finance their periods of unemployment. Most people are simply supported by their families. This, of course, does not imply that their unemployment does not impose hardships. It is wasteful, and can affect the individual self-esteem, and can, if the numbers become larger and larger, be politically untenable. These are all things that the government has to be concerned about.

THE STRUCTURE OF LABOUR MARKET SEGMENTATION

The structures of labour market segmentation to be presented below can be diagrammatically shown in Figure 5.1. Because workers earn higher wages if they can get into the formal sector, this is the sector of first choice. Those who cannot get in end up in one of two alternatives; either in the informal sector, or some may become unemployed while waiting to get into the formal sector. This is of course a gross simplification of the actual situation. As we already mentioned, some workers may go to work in the informal sector while waiting for a formal sector job. Some may withdraw from the labour force altogether. Also, the dividing line between what is a "formal" sector job, and what is "informal" may not be as clear-cut as the figure makes out. However, the simplicity of the figure helps as a guide line in thinking about labour market segmentation, and as will be shown below, through results from an econometric analysis of segmentation, gives a great deal of insight into how the labour market actually works.

To begin the analysis of labour market segmentation, it is necessary to use certain proxies or indicators to separate out those workers one believes belong to the formal sector from those in the informal sector. One important proxy which can be used is "work-status". In the Labour Force Surveys, work-status is separated out into five main categories:-

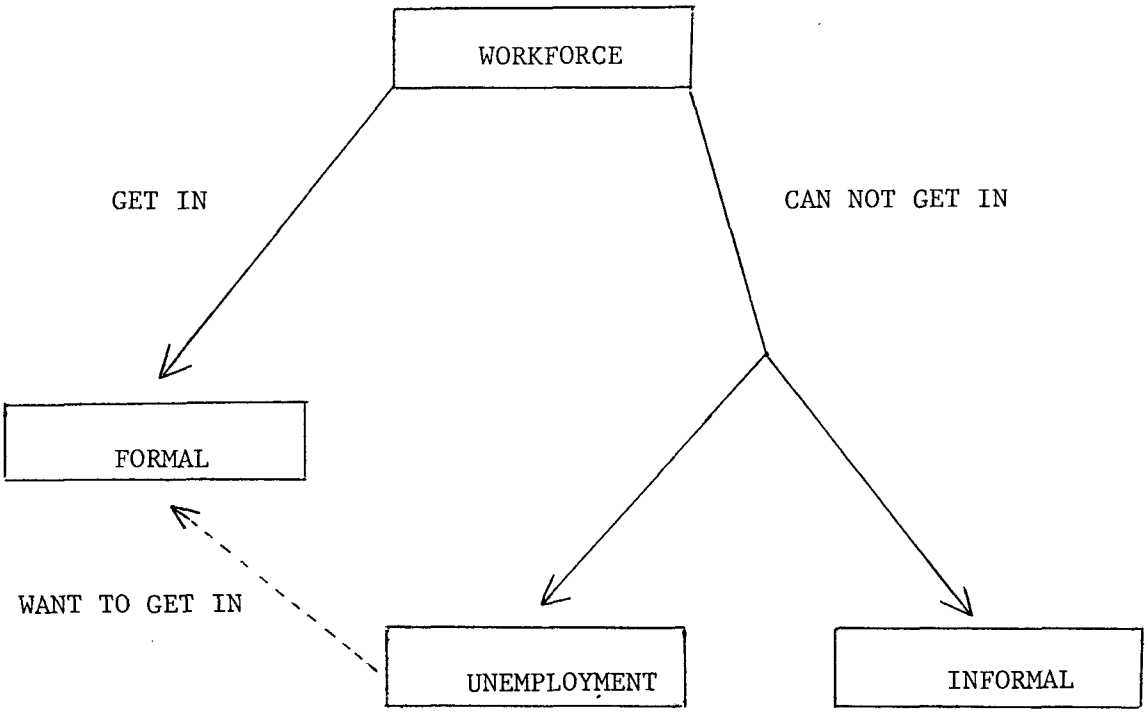

WORKFORCE
GET IN
CAN NOT GET IN
FORMAL
WANT TO GET IN
UNEMPLOYMENT
INFORMAL

Figure 5.1

1. Government Employees
2. Private Employees
3. Employer
4. Own-account Workers
5. Unpaid Family Workers

One clear distinction is whether the individual works for the government, which should be regarded as part of the formal sector. This is quite natural, because government wages and employment levels are essentially policy variables, and not determined by market forces.

For non-government work-status, by far the most numerous in Thailand are the own-account workers and unpaid family workers, because most agricultural employment are in these groups. It is generally regarded that these belong to the informal sector, i.e. that entry is fairly free. While this is probably fairly accurate for the bulk of the own-account and unpaid family workers, it could be the case that for certain occupations in this group, entry is far from easy, especially in the urban areas. This will be true for those occupations requiring significant capital assets to operate. The imperfections in the capital market can be an important barrier to entry. Very little is known about this however, and in the analysis below it turns out that, at least in the urban areas, the own account workers are really a mixture, partly formal and partly informal. Certainly entry is by no means easy, but on the other hand, it does not seem to be an attractive alternative for the better educated workers.

Employers are really part of the formal labour market. Entry is difficult, but the barriers to entry arise not from labour market imperfections, but from the imperfections in the capital market. This group is however a very small part of total employment (around 4% in municipal areas, and about 0.6% in non-municipal areas), and we shall not deal much with them below.

For private employees, who in fact are the most numerous group in the municipal areas (42.8% of total municipal employment), the situation is similar to that for the own-account and unpaid family workers in that, with the normally available information, it is difficult to separate out those who are in the formal sector from those in the informal sector. However, a focus on this group is quite important for the open unemployment problem. As already discussed, the future is one where government employment cannot be expected to grow very fast. The private sector will have to play an increasingly important role in absorbing the better educated workers in the future. However, it will be the more attractive jobs in the private sectors, which

are real alternatives to government employment, because the government tends to pay more than the private sector for educational groups below the university level, particularly the vocational group. In the private sector, looking at the past trends in employment growth and structure of educated employment (Tables 5.3.7 and 5.3.8), it is seen that the own-account workers have not been growing very fast, and has a very small share of educated workers in its total. Actually, as far as the urban areas are concerned the average growth of employment of the own-account and unpaid family workers as just about been zero, so it is hard to expect this group to grow much in the municipal areas in the future.

Apart from the information on work-status as already discussed, the standard questions of the Labour Force Survey contain few other pieces of information that could be used as reasonable proxies for the formal-informal split. The two that are available are information on occupations and on industries of the employees. Some occupations one would clearly regard as being part of the formal sector, for example doctors or lawyers. Similarly, it may also be fairly accurate to view employees in agriculture as part of the informal sector. What is needed however, is more than this. From researches done in other countries, it appears that two variables are quite crucial in explaining variations in wage determination behaviour, and have been used as proxies for the formal informal split:- unionization, and firm size.

The story that wage determination in unionized sectors is different to the standard text-book demand and supply analysis is nothing new, and very understandable. With a union, the situation becomes one resembling bilateral monopoly, and bargaining power becomes a dominant factor in the determination of wages, rather than demand and supply. For industrialized countries, this has up until recently been the major focus in research on imperfect labour markets.

Recently, with more research done on labour markets in LDC's, and with new theories of contractual arrangements in labour markets, more and more attention is now focused on other indicators of segmentation, with firm size being probably the most important. Theories such as those based upon implicit contracts, efficiency wages, turnover etc., stress the possibility that wages that are freely set by optimizing agents may fail to clear the market. These theories in turn have been used to explain the observations that wages cannot be explained totally by human capital variables, and that variables such as firm size have independent effect on wages. Thus, seemingly

identical individuals get paid different wages depending on which part of the labour market they work in (although in the same geographical location).

To get these additional information which can be used as proxies for the formal-informal split, in the same survey that generated the new data on seasonal migration, a number of questions were added to ask respondents living in municipal areas details regarding their place of work, as well as questions concerning their job or unemployment experience. These additional questions were restricted to respondents in municipal areas to keep down the cost of the survey, and also because the open unemployment problem in the rural areas are likely to spill over into the urban areas through migration.

The additional questions in the urban areas yielded information on such variables as firm size, unionization and the types of contract; all relevant to the formal-informal distinction. This makes available some of the crucial proxies which are important for discriminating between formal and informal sector characteristics. Even these are incomplete in not containing such information as capital intensities and raw material inputs or the employment structures of firms. However, these latter information cannot be obtained reliably through asking the employees, and require firm level surveys.

The new information yielded by the survey were generally very interesting and made a great deal of economic sense. Here, we shall only briefly touch on the major findings.

By far the most important new variable is firm size. It is commonly regarded that large firms are part of the formal sector, with well developed internal labour markets, with much firm specific training, and many other features that modern theories of wage determination suggest may lead them to pay a wage above the market clearing level. The employment pattern of private employees in municipal areas by firm sizes and regions are given in Table 5.4.1 .

This table shows clearly the importance of Bangkok as the source of municipal employment for private employees. Bangkok accounts for 70% of all private employees in municipal areas. The next most important is the Central region, with the North-east as the least important. Together with its importance for the total employment of private employees, Bangkok is also very important as the center for the larger firms. If one looks at the employment distribution across firm sizes by region, one finds that for the North and North-east, around 45% of all

private employees in municipal areas work in firms with 1-5 workers. For the Central and the South, the proportion is around 33%. In Bangkok, this proportion is only 22%. For the very large firms, those with more than 50 employees, again a more than proportionate ratio is in Bangkok, which accounts for 83% of all employees in such firm compares to the 70% of employees in all firms. These profiles are not too surprising, and simply confirms what one would normally expect, given the high degree of centralization in the Thai economy.

TABLE 5.4.1
TAB OF FIRM SIZE BY REGION
PRIVATE EMPLOYEE - MUNICIPAL AREA
(LABOUR FORCE SURVEY 1984 : JULY-SEPTEMBER)

	FIRM SIZE	1-5	6-10	11-20	21-50	>50	MISS	ALL
R	BANGKOK	217654	153175	168347	144017	290762	28708	1002663
E	CENTRAL	44753	22979	19183	21325	28877	12646	149763
G	NORTHEAST	28831	14705	8363	7879	3377	5141	68295
I	NORTH	45846	15137	16175	16890	11857	1465	107371
O	SOUTH	32177	21821	14826	14345	15298	5289	103756
N	ALL	369262	227816	226893	204457	350170	53250	1431848

ROW SHARES

	FIRM SIZE	1-5	6-10	11-20	21-50	>50	ALL
R	BANGKOK	22.3%	15.7%	17.3%	14.8%	29.9%	100.0%
E	CENTRAL	32.6%	16.8%	14.0%	15.6%	21.1%	100.0%
G	NORTHEAST	45.7%	23.3%	13.2%	12.5%	5.3%	100.0%
I	NORTH	43.3%	14.3%	15.3%	15.9%	11.2%	100.0%
O	SOUTH	32.7%	22.2%	15.1%	14.6%	15.5%	100.0%
N	ALL	26.8%	16.5%	16.5%	14.8%	25.4%	100.0%

COLUMN SHARES

	FIRM SIZE	1-5	6-10	11-20	21-50	>50	ALL
R	BANGKOK	58.9%	67.2%	74.2%	70.4%	83.0%	70.0%
E	CENTRAL	12.1%	10.1%	8.5%	10.4%	8.2%	10.5%
G	NORTHEAST	7.8%	6.5%	3.7%	3.9%	1.0%	4.8%
I	NORTH	12.4%	6.6%	7.1%	8.3%	3.4%	7.5%
O	SOUTH	8.7%	9.6%	6.5%	7.0%	4.4%	7.2%
N	ALL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE 5.4.2
TAB OF FIRM SIZE BY EDUCATION
PRIVATE EMPLOYEE - MUNICIPAL AREA
(LABOUR FORCE SURVEY 1984 : JULY-SEPTEMBER)

EDUCATION	FIRM SIZE 1-5	6-10	11-20	21-50	>50	MISS	ALL
<P4	33258	18556	12783	6089	9544	3912	84142
ELEMENTARY	275890	144220	118664	107498	166602	30777	843650
SECONDARY	37621	38662	44223	31321	73182	6947	231954
SH-COURSE	1928	0	0	0	0	0	1928
VOCATIONAL	9822	11582	22064	20530	45510	6000	115509
TEACHER	0	4371	4921	7315	9780	0	26387
UNIVERSITY	7972	6400	22717	27220	41547	4885	110741
OTHERS	742	860	710	295	2122	729	5457
MISS	2029	3166	811	4188	1885	0	12080
ALL	369262	227816	226893	204457	350170	53250	1431848

ROW SHARES

EDUCATION	FIRM SIZE 1-5	6-10	11-20	21-50	>50	ALL
<P4	41.45%	23.13%	15.93%	7.59%	11.90%	100.00%
ELEMENTARY	33.94%	17.74%	14.60%	13.22%	20.50%	100.00%
SECONDARY	16.72%	17.18%	19.65%	13.92%	32.52%	100.00%
SH-COURSE	100.00%	.00%	.00%	.00%	.00%	100.00%
VOCATIONAL	8.97%	10.58%	20.15%	18.75%	41.56%	100.00%
TEACHER	.00%	16.56%	18.65%	27.72%	37.06%	100.00%
UNIVERSITY	7.53%	6.05%	21.46%	25.71%	39.25%	100.00%
ALL	26.79%	16.53%	16.46%	14.83%	25.40%	100.00%

COLUMN SHARES

EDUCATION	FIRM SIZE 1-5	6-10	11-20	21-50	>50	ALL
<P4	9.07%	8.29%	5.67%	3.04%	2.76%	5.95%
ELEMENTARY	75.28%	64.44%	52.65%	53.76%	48.13%	59.65%
SECONDARY	10.27%	17.28%	19.62%	15.66%	21.14%	16.40%
SH-COURSE	.53%	.00%	.00%	.00%	.00%	.14%
VOCATIONAL	2.68%	5.18%	9.79%	10.27%	13.15%	8.17%
TEACHER	.00%	1.95%	2.18%	3.66%	2.83%	1.87%
UNIVERSITY	2.18%	2.86%	10.08%	13.61%	12.00%	7.83%
ALL	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Apart from the government, large firms are also an important source of employment for the better educated workers. Table 5.4.2 shows the distribution of employment by firm sizes and educational qualifications. For all private employees, about 65% have elementary education or below. Very few have short-course vocational education, as most of these are own-account workers. If one looks at where each of the major educational category works, it can be seen that, in general, as the educational level gets higher, the more important is the larger size firm for their employment. For those with elementary education, 34% are in firms with 1-5 workers, and 20% are in those with over 50 workers. For those with secondary education, the respective proportions are 17% and 32%, for those with vocational education, 9% and 41%, and for those with university education, 8% and 40%. Similarly, looking at the distribution of educational levels across firm sizes, one can see that in very small firms (1-5 workers), 84% of all employees have elementary education or below. For the largest firms, this ratio is only 51%.

The importance of the larger firms for the employment of the better educated is an important factor that is related to the prospects for open unemployment. Larger firms tend to be the formal sector firms, and if their wage policy is not completely responsive to the market situation as hypothesized by the segmented labour market theories, then access to these firms are difficult. In a situation where the supply of the better educated exceeds the demand, these workers cannot hope that the formal sector can absorb all or most of the new entrants. Then, in order to generate employment for these workers, it is necessary that they be more willing to move to the informal sectors.

That it is attractive to work in large firms is borne out by table 5.4.3, giving the average monthly wage by firm sizes and educational levels. In general, one can see a clear difference between wages in smaller and larger firms for all the educational categories, except for those with university education. The latter case is because of the effect of certain professional categories in small firms, eg. doctors and lawyers. Even for the university educated group, ignoring the 1-5 worker firm size category, one can still see wages rising with firm size. Thus, we seem to see that even controlling for education, which is an important human capital variable explaining wage differences, firm size has an independent effect. For the same level of education, working in a large firm pays better than in a small firm (again bear in mind the caveat about the professional occupations in small firms mentioned earlier).

TABLE 5.4.3
AVERAGE MONTHLY WAGE: FIRM SIZE BY EDUCATION
PRIVATE EMPLOYEE - MUNICIPAL AREA
(LABOUR FORCE SURVEY 1984 : JULY-SEPTEMBER)

EDUCATION	FIRM SIZE 1-5	6-10	11-20	21-50	>50	ALL
< P4	1454	1733	1729	2979	2177	1750
ELEMENTARY	1403	1945	2084	2097	2479	1905
SECONDARY	2043	2716	2703	2932	3156	2755
SH-COURSE	1643	0	0	0	0	1643
VOCATIONAL	2282	2989	4198	3282	4187	3747
TEACHER	0	2322	2698	2851	4262	3274
UNIVERSITY	9805	3717	4107	4649	8465	6376
ALL	1686	2158	2625	2705	3585	2536

Other dimensions of the relationships between firm sizes and other variables can be summarized as follows:-

1. The work force in larger firms tends to be more stable. They seem to have a higher share of workers with longer experiences in the firm than the smaller firms. In firms between 1-5 workers, only 24% of the employees have worked for 6 or more years with the firm, this ratio is 37% in firms with 50 or more employees.

2. The first entry point for migrants seems to be in the small firms. As they stay longer in the municipal areas, their ratio in the larger firms increases. Partly, this may be due to upward mobility as they become more assimilated into the area, but some of it may also be due to the fact that most of the migrants who did not get good jobs in the larger firms, do not remain for more than a few years in the municipal areas.

3. Firm size also correlates well with other possible indicators of being in the formal sector. Occupations (as derived from 4 digit occupation codes in the Labour Force Surveys) which a priori one would expect in the formal sector are mostly found in larger firms. The

only exception being some professional occupations such as doctors and lawyers, who also work in the very small firms.

4. Unionized firms also are mostly large firms. Only 6.5% of private employees in the municipal areas report belonging to a firm with unions. However, over 20% of workers in firms with 50 or more workers report that their firm is unionized. 81.5% of all workers in unionized firms are in firms with 50 or more workers.

5. 28% of all employees report having some type of "formal" contract with their employer. The larger the firm, the more likely it is for the firm to offer a "formal" contract to its workers.

6. It seems that the three new proxies for segmentation; firm sizes, unionization, and the existence of a "formal" contract with the firm, all have independent effect on the wage an employee gets. However, the impact of firm size on wages is much greater for those who are not in unionized firms, and those who do not have a contract with their employer.

7. Not all employees in large firms can be regarded as having formal sector employment. We need to also look at the type of wage payment an individual receives. The large firms still employ a significant proportion of its work force on a daily basis, 23% in firms with 50 or more worker, compared to 21% in firms with 1-5 workers. For most workers under daily contract, there is really no stability of employment, something we would normally associate with formal sector employment. Also, we find that for workers under daily contracts, the average wage hardly changes across firm sizes, suggesting that they best be treated as part of the informal sector.

From a preliminary study of the various indicators, it is possible to identify the combinations of factors that could reasonably be used to indicate formal sector employment.

1. Government employment is part of the formal sector. The same is true for Employers.

2. For an employee, if the worker belongs to a union, then he should be regarded as belonging to the formal sector. In fact, even if he does not but the firm he works for is unionized, then there is a case for regarding him as being in the formal sector, because a unionized firm tends to pay a higher wage to its employees, whether the individual belongs to a union or not.

3. A number of occupations should be viewed as part of the formal sector. It is however necessary to get down to the 4 digit code level to get sufficient description of an occupation that should be viewed as "formal".

4. For those with "contracts" with the firm, there seems to be two alternatives. First, one can regard only the contract which pays by the month as being secure enough to include as part of the formal sector work agreement. Alternatively, one may regard any kind of contract as indicating stability. In what is presented below, we choose the latter.

4. With firm sizes, there are many choices. If we ignore those that have been classified as part of the formal sectors by the other criteria above, the question concerns the cut-off point for large versus small, and whether given such a cut-off level, one should use the type of wage payment to classify workers further. A clear alternative, from scrutinizing the pattern of wages and employment, seems to be a cut off level at either more than 5 workers or more than 10 workers. Between 11 and 50 workers, the average wage does not seem to increase dramatically. For the type of wage payment one can either select only those with monthly wages or everyone. In this report, the 10 worker level is used, and we only select workers who are not paid by the day as part of the formal sector, assuming that they do not qualify for the formal sector by virtue of other indicators, such as unionization, occupations etc..

From using the proxies mentioned above, Table 5.4.4 shows the private employees in the municipal areas broken down by formal-informal, and by education. Also shown for comparison is the pattern for government employment.

It can be seen that there are 587,398 private employees in the municipal formal sector. This represents 41% of total private employee employment in the municipal areas. The number

is just less than the number of government employees. This is certainly helpful in terms of the private sector's ability to absorb the educated workers now that the government has to slow down its own employment growth. However, looking at the shares of employment by education, we can see that even the private formal sector do not employ as much of the better educated workers when compared to the government. In the government, 23.5% of workers have university education; this is 16.6% for the private formal sector. Similarly, for vocational education, the share in government employment is 17%, but 14.6% in the private formal sector. The private formal sector employs a much higher proportion of those with primary education or below. 41.4% of private formal sector employment is made up from this group, compared to only 20.2% in the government sector.

Although the private formal sector does not employ as high a proportion of the better educated as the government, it is much more important for the better educated group than the private informal sector. 83.1% of all employees in the informal sector have primary education or below. 11.2% have secondary education, and the share for those with vocational education and above are very small.

TABLE 5.4.4
FORMAL AND INFORMAL EMPLOYMENT
(GOVERNMENT AND PRIVATE EMPLOYEES)

	EDUCATIONAL LEVELS					
	<=PRIM	SECOND	VOCAT	TEACHER	UNIVER	TOTAL
GOVERNMENT	134593	167507	113076	93787	156379	665342
PRV FORMAL	243355	137715	85681	23298	97350	587398
PRV INFORMAL	701974	94239	31756	3089	13391	844450
ROW SHARES	<=PRIM	SECOND	VOCAT	TEACHER	UNIVER	TOTAL
GOVERNMENT	20.23	25.18	17.00	14.10	23.50	100
PRV FORMAL	41.43	23.44	14.59	3.97	16.57	100
PRV INFORMAL	83.13	11.16	3.76	.37	1.59	100

To learn more about the nature of the formal-informal differences and the functioning of the labour market in general, an econometric estimation of labour market structure was carried out following the structure given earlier in Figure 5.1. The idea was to find out more about the workers who can get into the formal sector, and the behaviours of those who cannot get in, in terms of choosing informal sector job or unemployment. The details of the estimations (using binary probit with selectivity, and wage equations taking into account the selectivity bias present in the structure) and results will be reported elsewhere. Here the main impressions can be given.

1. An individual is more likely to be found in the formal sector if the person has the following characteristics:- male, better educated (and more likely as the educational level increases), and not a new migrant to the area. After the first year or so, migration status does not independently influence the chance of getting into the formal sector.

2. If an individual cannot get into the formal sector, then the following characteristics makes it more likely for the individual to be unemployed rather than work in the informal sector:- male and better educated (again the chance of choosing unemployment is higher as the educational level increases). Migration status does not seem to matter for informal versus open unemployment choice. Also, it was found that an individual who is more able (controlling for education) but cannot get into the formal sector, possibly through chance factors, is more likely to queue up for formal sector job; presumably he or she is more confident of eventually getting into the formal sector.

3. On wages, the findings are quite distinct for the formal and informal sector. In the informal sector, education does not influence the wage. Thus, there is no returns to education (at least, the educational variables are not significant). The South, Central, and Bangkok, all pay a higher informal wage than the North or the North-east, the latter two being similar. Males get higher informal wage, and the effect of age has the expected increasing and then decreasing shape. Experience in the firm also positively affect

wages. Migration status is only important for very new migrants. These tend to get paid less, but as they stay on longer than a year or two, their wage becomes indistinguishable from other informal workers.

4. In the formal sector, there are clear and large returns to education. If we look at prime age males, 30 years old, in Bangkok, then those with secondary education earn about 900 baht per month more than those with just primary education. Those with vocational education earn another 900 baht per month more than those with secondary. And those with university education earn 2,000 baht per month more than the vocational group.

5. The government pays more than the private formal sector for all levels of education except for the university level, where the average government wage is about 300 baht per month less.

6. In the formal sector, migrants who have been in the area for less than 5 years tend to get paid less than the locals. This may be because an important consideration for the formal sector is stability of employment, and migrants may move back to their original area after a short time with the firm.

7. The own-account worker group is very problematical. Including them in the estimations yields very poor results. This bears out the fact that the own-account workers are really two groups, partly formal, and partly informal. Some own account jobs are very hard to get into because it requires a lot of financial capital. These are mixed up with other jobs which are really part of the informal sector jobs. One thing that is very clear however is that migrants do not become own-account workers. This shows that access is certainly not easy for the migrants. Also, the better educated workers are less likely to be own-account workers.

The econometric findings fits it well with the picture on labour market segmentation introduced at the beginning of this chapter. There are large wage differentials between the formal and informal sector, and this differential increases with the level of education (because the returns to education in the informal sector are essentially zero, while there are large returns in the formal sector). Thus, the more educated one is, the more it pays to wait for a formal sector job. This is consistent with the observations that the better educated have a high rate of open unemployment.

In the section to follow, we draw on this view of labour market segmentation to look at the outlook for open unemployment in the future.

5.5 OUTLOOK FOR MUNICIPAL OPEN UNEMPLOYMENT

This section draws upon what we have learned on labour market segmentation to judge the implications on open unemployment in the future.

Remember that the main idea is that the government will not expand by much in the future (2% per annum), so the better educated will have to find alternative employment in the private sector. The own-account and unpaid family workers group does not promise much. This group has shown just about zero growth in the municipal areas in the last 5 years or so. Also, the more attractive own-account jobs are really formal sector jobs, with access being restricted mostly through imperfections in the capital market, so that unless the family already has business connections, it is difficult for an educated worker to set himself up in business. The Employer group is similar, and probably even more restricted. This basically leaves the private employees in formal sectors. This group offers almost as attractive an employment opportunity as government jobs. The wage is fairly high, and higher than in the government for the university educated group. However, not everyone can get in because wages are not flexible as in the informal sector. Thus, the employment prospects of the better educated depends essentially on two things:-

1. How fast will the supply for the various groups increase?

2. How fast can the private formal sector expands to take up the slack left by slow government employment growth?

We shall only focus on municipal employment and unemployment prospects. As already mentioned, educated unemployment in the rural areas probably translate into rural to urban migration, so that it will just put additional pressure on the absorptive capacity of the urban rural labour market with some lag. Second, there are not yet enough information on the extent of formal sector employment in the rural areas. And, third, most importantly, the rural areas are likely to be faced by the much more worrying problem of low agricultural prices, underemployment, falling real wages, and seasonal unemployment. When viewed in comparison to these other issues which will affect the broad mass of the rural labour forces, the problem of open unemployment in rural areas may not attract much attention.

OUTLOOK ON MUNICIPAL OPEN UNEMPLOYMENT

To project municipal labour supply increases by educational levels in the future, we rely on a number of assumptions (these seem reasonable).

1. The total labour force growth is taken from the labour force projections presented in Chapter 3.

2. The growth of each educational category is assumed to be similar to what happened in the period 1977-1984, with normalization so that the total labour force increase is consistent with that in Chapter 3.

3. One exception to this is that for the group with teacher training, where there is clear government policy to control their numbers. For this group, it is assumed that the supply will increase in line with the demand, so that their open unemployment problem will not be better or worse than at present. In fact, in the municipal areas, the unemployment problems for those with teacher training are not severe, with an open unemployment rate of only 2.7% in 1984. Of course, just after graduation, there are many teachers looking for a job, as evidenced by publicity associated with their job applications in the earlier part of the year. In any case, with conscious government policy to produce very few new teachers (below the degree level) in the future, the open unemployment problem for teachers are unlikely to become very bad.

The municipal labour force projections by educational groups are given in Table 5.5.1, together with the growth rates in the past, and the average growth during the periods of the Sixth and Seventh Plan. (The figures here excludes non-municipal Bangkok as well, so the actual total will be less than that in the Tables in Chapter 3. The trends are, however, the same)

Remember from Chapter 3 that, for municipal areas, the labour force growth is expected to be high all the way through to the end of the Seventh Plan, so that one cannot really hope for a slow down in supply to help with the absorption problem.

Between 1986 and 1991, the total municipal work force is expected to increase on average at about 3.5% per annum, with the growth rate declining just slightly to 3.15% per annum in the period of the Seventh Plan (1992-1996). In terms of growth by education however, based on past trends, the growth of the vocational group, and the university educated group will be very high. In fact, for the university group, the figure may be an underestimate due to very large enrollment in the open universities in recent years. The group with primary education and below are in fact expected to decrease during the period of the Seventh Plan, as enrollment at the secondary level continue to increase.

TABLE 5.5.1
WORK FORCE PROJECTION BY EDUCATION
(MUNICIPAL AREAS)

growth 77-84	1.88%	4.50%	10.97%	5.83%	12.71%	3.93%
YEAR	<=PRIM	SECOND	VOCAT	TEACHER	UNIVER	TOTAL
1984	2,090,952	619,243	328,617	132,035	312,357	3,483,204
1985	2,119,629	644,071	362,954	134,676	350,405	3,611,734
1986	2,144,331	668,616	400,114	137,369	392,337	3,742,768
1987	2,164,938	692,781	440,244	140,117	438,455	3,876,534
1988	2,181,171	716,415	483,449	142,919	489,035	4,012,988
1989	2,192,772	739,359	529,823	145,777	544,347	4,152,079
1990	2,199,512	761,450	579,437	148,693	604,656	4,293,748
1991	2,201,189	782,524	632,341	151,667	670,210	4,437,932
1992	2,197,643	802,416	688,562	154,700	741,240	4,584,561
1993	2,188,749	820,964	748,095	157,794	817,956	4,733,559
1994	2,173,573	837,704	810,611	160,950	900,207	4,883,045
1995	2,152,104	852,469	875,972	164,169	988,045	5,032,759
1996	2,124,419	865,119	944,009	167,452	1,081,484	5,182,484
AVERAGE GROWTH						
86-91	.61%	3.20%	9.59%	2.00%	11.30%	3.47%
91-96	-.53%	2.03%	8.34%	2.00%	10.04%	3.15%

To see what happens to open unemployment by educational levels, some assumptions were made:-

1. Government employment, excluding State Enterprises, is assumed to increase at 2% per annum through out the Sixth and Seventh Plan.

2. The growth in private formal sectors employment (and State Enterprises) are taken from the TDRI macroeconomic model, which separate out formal and informal sectors. In the base case, formal sector employment increases at around 4% per annum in industries, and 5.2% per annum in services. The Employer group is added to the private formal sector, and the same growth rates are used.

3. The growth of own-account and unpaid family workers by educational groups are assumed to follow past trends, with total employment for these groups showing almost no growth, but within each educational category the better educated expands faster as in the last 8 years.

4. Those workers who cannot get into the formal sector are assumed to either go and work in the informal sector, or become openly unemployed. For each educational group, the ratio of those who cannot get into the formal sector who become unemployed is assumed to be as in 1984. This is just an assumption that expectations of the educated group, and may be their aversion for informal sector jobs, remain fairly much as now.

These assumptions should be viewed as giving rough guides on what may be expected in the future. Clearly, there are many factors not taken into account, such as more willingness on the part of the better educated who cannot get into the formal sector to go and work in the informal sector, or they may find it easier to become own-account workers etc.. However, it seems that these assumptions should not lead one too far astray. We already saw that there are big wage differentials between the formal and informal sectors for the educated group, and education has just about zero return in the informal sector, so it is unlikely that the better educated will be any more willing to go and work in such sectors than they are now. Also, it is difficult to see how imperfections associated with the financial market, which serves as a barrier to entry into the more attractive self-employment job can change that much over time.

One final assumption is quite crucial. Although the private formal sector will expand by only around 5% per annum, and the government at 2% per annum, it is unrealistic to assume that this will apply equally to all educational groups within these sectors. The reason is that as the supply of labour shifts towards a better educated work force, we will find that the composition of employment by educational groups changes. Looking at the past, we find that in government employment over the last 5-6 years, the share of those with primary education and below has been falling by about 0.8 percentage point every year. This is also true of those with secondary education. For the vocational education group, and the university educated group, the shares have increased by about 0.8 percentage point every year. This may be due to substitutability as relative wage changes a little. However, this is probably not the main explanation, because as we saw earlier, the relative wages across educational groups have been rather stable, except for the secondary education group, whose wages have fallen relative to the other groups (so if any substitution should take place, it goes the wrong way). Rather, what actually happened was probably a bumping of the less educated by the better educated. As there are excess supply of the better educated groups, employers upgrade the educational requirements for the same job. What used to be done by primary educated individuals, now require secondary education, what used to require secondary education now requires university degrees etc...

Clearly, this has to be taken into account, because for say a 5% increase in total private formal jobs, the better educated group may expand by much more than this, as they bump out the less educated. This will help with the open unemployment problem in two ways:- (i) this push up the demand for the educated workers, and (ii) because the less educated are more willing to accept informal sector jobs, as they are pushed out off the formal sector, most of them go to work in the informal sector rather than become unemployed. The situation is very different with the better educated who cannot get into the formal sector, because more of these end up being unemployed.

TABLE 5.5.2
OPEN UNEMPLOYMENT PROJECTION : BASE CASE
(1986-1996 : MUNICIPAL)

1986

	<=PRIM	SECOND	VOCAT	TEACHER	UNIV	TOTAL
PRIVATE	401677	217408	172070	0	169963	961118
GOV-SERV	69764	114480	76004	123920	135096	519263
TOT FORMAL	471441	331887	248074	123920	305059	1480381
WORK FORCE	2144331	668616	400114	137369	392337	3742768
OWN-ACC	852317	162544	58180	7325	35180	1115545
NOT FORMAL	1672890	336729	152040	13450	87278	2262387
UNEMPLOY	54407	39755	52174	3662	14270	164269
UNEMP RATE	2.54%	5.95%	13.04%	2.67%	3.64%	4.39%

1991

	<=PRIM	SECOND	VOCAT	TEACHER	UNIV	TOTAL
TOTAL	456963	227184	266719	0	264343	1215211
GOV-SERV	54093	103463	106847	136817	172089	573309
TOT FORMAL	511057	330647	373566	136817	436432	1788519
WORK FORCE	2201189	782524	632341	151667	670210	4437932
OWN-ACC	785290	170076	93518	10391	58855	1118130
NOT FORMAL	1690133	451877	258775	14849	233778	2649412
UNEMPLOY	54968	53350	88801	4043	38223	239385
UNEMP RATE	2.50%	6.82%	14.04%	2.67%	5.70%	5.39%
GR UNEMP	.21%	6.06%	11.22%	2.00%	21.78%	7.82%
GR EM FORM	1.63%	-.07%	8.53%	2.00%	7.43%	3.85%

1996

	<=PRIM	SECOND	VOCAT	TEACHER	UNIV	TOTAL
TOTAL	513836	227076	399661	0	397011	1537584
GOV-SERV	34404	88912	143287	151057	215319	632979
TOT FORMAL	548240	315988	542947	151057	612330	2170563
WORK FORCE	2124419	865119	944009	167452	1081484	5182484
OWN-ACC	696024	171191	144606	14181	94719	1120721
NOT FORMAL	1576179	549131	401062	16395	469153	3011920
UNEMPLOY	51262	64832	137628	4464	76708	334894
UNEMP RATE	2.41%	7.49%	14.58%	2.67%	7.09%	6.46%
GR UNEMP	-1.39%	3.98%	9.16%	2.00%	14.95%	6.95%
GR EM FORM	1.41%	-.90%	7.77%	2.00%	7.01%	3.95%

TABLE 5.5.3
OPEN UNEMPLOYMENT PROJECTION : HIGH GROWTH CASE
(1986-1996 : MUNICIPAL)

1986

	<=PRIM	SECOND	VOCAT	TEACHER	UNIV	TOTAL
PRIVATE	407838	220737	174706	0	172566	975848
GOV-SERV	69764	114480	76004	123920	135096	519263
TOT FORMAL	477603	335217	250710	123920	307662	1495112
WORK FORCE	2144331	668616	400114	137369	392337	3742768
OWN-ACC	852317	162544	58180	7325	35180	1115545
NOT FORMAL	1666728	333399	149404	13450	84675	2247656
UNEMPLOY	54207	39362	51269	3662	13845	162345
UNEMP RATE	2.53%	5.89%	12.81%	2.67%	3.53%	4.34%

1991

	<=PRIM	SECOND	VOCAT	TEACHER	UNIV	TOTAL
PRIVATE	481971	239594	281295	0	278786	1281646
GOV-SERV	54093	103463	106847	136817	172089	573309
TOT FORMAL	536064	343057	388142	136817	450874	1854954
WORK FORCE	2201189	782524	632341	151667	670210	4437932
OWN-ACC	785290	170076	93518	10391	58855	1118130
NOT FORMAL	1665125	439467	244200	14849	219336	2582977
UNEMPLOY	54155	51884	83799	4043	35862	229744
UNEMP RATE	2.46%	6.63%	13.25%	2.67%	5.35%	5.18%
GR UNEMP	-.02%	5.68%	10.33%	2.00%	20.97%	7.19%
GR EMPFORMAL	2.34%	.46%	9.13%	2.00%	7.94%	4.41%

1996

	<=PRIM	SECOND	VOCAT	TEACHER	UNIV	TOTAL
PRIVATE	562977	248745	437825	0	434916	1684463
GOV-SERV	34404	88912	143287	151057	215319	632979
TOT FORMAL	597381	337657	581112	151057	650235	2317442
WORK FORCE	2124419	865119	944009	167452	1081484	5182484
OWN-ACC	696024	171191	144606	14181	94719	1120721
NOT FORMAL	1527038	527462	362898	16395	431249	2865042
UNEMPLOY	49664	62273	124532	4464	70511	311443
UNEMP RATE	2.34%	7.20%	13.19%	2.67%	6.52%	6.01%
GR UNEMP	-1.72%	3.72%	8.24%	2.00%	14.48%	6.27%
GR EMPFORMAL	2.19%	-.32%	8.41%	2.00%	7.60%	4.55%

The outlook for open unemployment for the base case is given in Table 5.5.2, and Table 5.5.3 gives an alternative high GDP growth case, with formal sector employment in industries growing at 4.8% and services at 6%. (The table gives government employment (GOV-SERV), private formal employment (PRIVATE), which here includes the state enterprises, total work force, the own-account workers, the number who cannot get into the formal sectors (NOT FORMAL), and the rates of unemployment and various growth rates).

What is clear from these tables is that the private formal sector (which in these tables includes the state enterprises) will not be able to make up for the slow down in government employment. In the base case, the open unemployment rate for the municipal areas grows from 4.4% in 1986 to 5.4% in 1991, and 6.5% in 1996. The group which experiences the fastest growth in unemployment is the one with university education, whose unemployment grows by over 20% a year during the period of the Sixth Plan and by an average 15% in the Seventh Plan. The rate of graduate open unemployment increase from 3.6% in 1986 to 5.7% in 1991 and 7.1% in 1996. The next worse off group is the one with vocational education. Unemployment for this group increase by 11.2% in the Sixth Plan period, by 9.2% in the Seventh Plan period. However, because this is fairly near the rate of growth of the work force for this group, their unemployment rate does not increase dramatically, only from 13% in 1986 to 14% in 1991 and 14.6% in 1996. The primary and below and the secondary group are not so badly affected. The secondary group has quite a fast growth in unemployment during the Sixth Plan, at 6.1% per annum, but the rate of growth slows down to 4% in the Seventh Plan. Those with primary education and below in fact show a slightly decreasing rate of open unemployment, mainly because the work force growth for this group is small, and they are not so dependent on formal sector employment.

The high growth case does not show too much difference from the base case. This may seem surprising. However, the reason why this is the case is that with very fast growth in the supply of the better educated, together with a slow down in the most important source of employment for these workers (the government, and it is assumed that government employment growth remains at 2% per annum in the high GDP growth as well), a 1% increase in demand will not translate to much for the better educated. For the university educated group, the high case translate to only .6 of percent faster average formal sector employment during the Sixth Plan compared to the base case. For the vocational education group, it translate to an increase in growth of employment of .6 as well. Where the short fall between supply and demand are very large, this will not help much. In the base case formal employment growth for the university graduates is

around 7.4% during the Sixth Plan. This compares to a work force growth of 11.3% for this group. Thus, with a difference as large as 4% per annum, an increase of .6% per annum will not make much difference.

CONCLUSIONS

This chapter has explored the idea of labour market segmentation, and have tried to show that an understanding of segmentation is intimately linked to an understanding of open unemployment. What was learned on segmentation are then applied to getting an outlook on the development of open unemployment in the future.

The outlook for open unemployment for the better educated is not bright. The rates of open unemployment will increase quite fast all the way to the end of the Seventh Plan. It must be remembered that in terms of actual numbers, the openly unemployed are not that large. Even at the end of the Seventh Plan, municipal open unemployment is expected to number only about 335,000. This compares to about 4 million people seasonal unemployed every year in the rural areas. However, because the absolute numbers are not large does not mean that the government should not worry about it. In terms of rates of open unemployment, an unemployment rate of around 14-15% for the vocational group is very high, and for graduates, the rate is expected to climb quite fast to 7.1% in 1991.

The future is one where the private sector will have to play an increasing role in absorbing the better educated. This is a big change from the past, where the government, in a simplistic sense, essentially produced educated workers for its own use. Until the base of educated employment in the private formal sector becomes sufficiently large, the problems for the better educated will continue. Once the share of educated employment in the private sector becomes large enough, then the faster rate of growth of employment in the private sector, compared to the government, will have a more important impact on helping to reduce the unemployment of the better educated. However, this is unlikely to be the case until well after the Seventh Plan.

Because the private sector will become more and more important for the fortunes of the better educated, it becomes essential to design curriculum in the schools and universities to produce the types of education that will be useful in the private

sector. The needs there are presumable very different to those for public services. Also, thought has to be given to trying to reduce the growth in labour supply of the better educated, as the government is already doing for teacher training. The issues are however complex. Education is in some sense a right that individuals expect they should be able to pursue, if they have the ability. In a world where technical skills are needed more and more, it may be difficult for the government to limit educational places too much. However, with the current very high rates of growth there may be more room to maneuver, in that a reduction of growth by 1-2% per annum will not seem to be very drastic.

CHAPTER 6

QUALITY OF HUMAN RESOURCES

1. INTRODUCTION

Improved health and increased educational attainment are requisites and results of development -- goals in themselves and contributors to future development.

Enhanced access to health care and education is also a goal of development, one affected by government policy and by changes in patterns of private demand to which government and the private sector respond.

Increased availability and changing patterns of demand for education and health services have important immediate consequences for public budgets and management decisions, and longer-term consequences for average future family size, labor force participation, labor force growth, migration, and labor skill, trainability and productivity.

This chapter first summarizes available data on educational attainment and health status. Second, it looks at availability and patterns of demand for education and health services including issues of prices, subsidies and (perceived) variations in quality. This section includes projections through the current plan period. The last part of the chapter looks at management issues and options. In particular, it focus on prices, subsidies and private provision and on changes that might improve quality, efficiency and equity.

2. EDUCATIONAL ATTAINMENT AND HEALTH STATUS

2.1 Educational Attainment

The average educational attainment of the Thai population can be calculated from data collected in the National Labor Force Surveys (round two) in 1977, 1981 and 1984. Table 6.1 shows the changes from 1977 to 1984. Nationally, attainment of completed upper elementary and lower secondary doubled, or nearly doubled, during the period -- from 4.3 percent to 11 percent, and from 2.7 to 4.3 percent of the total population, respectively. Attainment of upper secondary, upper vocational and university levels also doubled, or more than doubled, during the period but from small bases. The modal attainment of the population in 1984 -- as in 1977 and 1981 -- was still lower-elementary (41.1 percent in 1984).

Educational attainment reflects past availability of schools, social demand for places, economic demand for graduates and migration. Thus, variations in attainment by region and by gender are more pronounced than current variations in availability of schools or in demand.

Table 6.1 also shows variations by municipal and non-municipal areas and by gender. Table 6.2 shows variations by region and by gender; and Table 6.3 shows variations between Bangkok and the rest of the Kingdom. Variation by gender is and has been highest in low attainment areas, and least in high attainment areas. Variation among regions -- excluding Bangkok -- are relatively small. While variations between municipal and non-municipal areas, reflecting past school availability, demand for graduates and migration, are large, as are the variations between Bangkok and the rest of the Kingdom. In 1984, for example, the proportion of the population with lower secondary attainment in Bangkok was 9.3 percent, two and half times higher than the proportion in the rest of the Kingdom; upper secondary attainment was 4.7 percent, seven times higher; and university attainment was 3.5 percent, more than thirteen times higher.

Current enrollment ratios indicate that attainment of young adults in the future will be much higher, although their distribution will depend on the economy, the labor market and migration. Enrollment at the primary level is at or near 100 percent of the nominal age group, but there is some counting of over-age students, repeaters and re-entrants in the data. More important, the number of students entering the sixth grade and presumably completing primary school is increasing -- by 15 percent between 1981 and 1985 (Table 6.4) -- even though the primary school age group grew very slowly during the period and is now stable or decreasing in most regions.

The enrollment ratio in academic lower secondary in 1985 was 35.1 percent and in academic upper secondary, 15.2 percent. (Table 6.5) Enrollment in vocational schools was an estimated 15 percent of age group 15 to 17 -- only slightly less than upper secondary. (Table 6.6) Enrollment in teachers colleges was 73,000 in 1985, 1.9 percent of age group 18 to 21. Enrollment in closed universities was 98,000, 2.5 percent of the age group, or a total of 4.4 percent of the age group in institutions of higher education to which admission is rationed by examination scores.

Total enrollment in 1984 in the open universities, where there are no enrollment ceilings and no admissions requirements except completed secondary education, was more than 645,000 students (NEC) -- indicating a very high level of social demand for higher education. Indeed, Ramkamhaeng is now one of the largest universities in the world.

Overall, these enrollment ratios compare favorably with countries at similar levels of per capita income. The one exception is enrollment in lower and upper academic secondary schools where Thailand lags behind the Asian NICs at comparable or lower per capita incomes.

A comparison between Thailand in 1985 and South Korea in 1955, 1965, and 1975 is as follows:

	Thailand	South Korea		
	1985	1955	1965	1975
Lower Secondary (age group 12-14)	35%	31%	39%	74%
Upper Secondary (age group 15-17)	15%	18%	27%	41%

(Sources: Thailand, Table 6.5 ; South Korea, HIID, 1980)

In South Korea, slightly less than half the enrollment in lower secondary school is and has been in private schools; more than half the enrollment in upper secondary is and has been in private schools. In Thailand, 13 percent of lower secondary school enrollment and 9 percent of upper secondary enrollment is in private schools. (Table 6.6) Later sections of this chapter focus on demand patterns, supply constraints and policy options at the academic secondary level.

2.2 Health Status

Available indicators of health status are crude death rates, life expectancy at birth, infant mortality rates, nutrition status of infants and children under five, and leading causes of death and illness.

The crude death rate per thousand has dropped steadily (Table 6.7) partly because of overall development and public health services, and partly because of changes in the age composition of the population -- now numerically biased toward the younger and healthier age groups.

Life expectancy at birth (Table 6.8) has increased by five years since 1965 -- male expectancy in 1980-1985 was 60 years and female 66. Life expectancy is projected to increase another five years for the generation that will be born after the year 2000.

Infant mortality rates (Table 6.9) have dropped by half or more since 1965 to a national average of 45 per 1,000. But regional disparities persist --with rates twice as high in the Northeast as in Bangkok, and overall rural rates 25 percent higher than urban rates.

MOPH surveys show a significant improvement in nutrition status of preschool children between 1981 and 1984. (Table 6.10) Second and third degree prevalence dropped from 16 to 6.7 percent. But similar regional variations persist. Second and third degree rates in the Northeast are three times higher than in the Central region. Also, nutrition status may be jeopardized by reduced agricultural household incomes caused but decreasing market prices of agriculture commodities.

Leading causes of death (in 1983) were accidents, heart disease, and cancer -- conditions which will increase demand for curative services and hospitalization. Twenty years ago, the leading causes of death were diarrheal disease, tuberculosis, and pneumonia. (Table 6.11)

Leading causes of illness (among children and the elderly in 1982) were diarrheal disease, malaria, dysentery, and dengue haemorrhgic fever (Table 6.12) -- conditions which are reducible by environmental sanitation and vector control and perhaps eventually preventible by vaccines.

Overall, these indicators of health status -- and particularly infant mortality -- compare favorably with countries at the same and higher levels of per capita income. (World Bank, World Development Report, 1986, pp. 234 - 235.) But a consequence is that Thailand must simultaneously respond to illnesses which are characteristic of high income countries and to persisting conditions related, in part, to poverty and the environment.

3. AVAILABILITY AND DEMAND FOR EDUCATION AND HEALTH SERVICES

3.1 Availability

Major capital investments and training of teachers and health personnel in past plan periods have made primary and lower secondary education places (Table 6.13) , and health posts, district and provincial hospitals (Table 6.14) and primary health care services widely available geographically. Rural/ urban and Bangkok/rest-of-the-country differences continue and are inevitable, but are nothing like as great as they were one or two decades ago. University

places are necessarily urban, but more dispersed regionally. They will become even more so if the proposed up-grading of teachers colleges to university status takes place. The open universities supplement the closed universities and offer a variety of first degree fields at low tuition and opportunity costs to students. Private education and private medical care are also urban, primarily Bangkok and the larger provincial cities.

3.2 Overview of Trends and Demand: Similarities and Differences

Similarities:

* government intervention in both " markets " is extensive; government is the principal producer of education and health services; it sets prices, provides subsidies, and establishes the conditions of entry for private providers;

* prices for most services are set below market; non-price rationing is accomplished by examinations (education) and by queues (health), but some informal price mechanisms appear to operate at the primary and secondary education levels at least;

* social demand for education by people scoring below threshold levels and/or unable to pay high (informal) prices is accommodated in vocational schools at the secondary level, and in the open universities at the higher education level;

* degree of subsidy increases with the level of service; for example the subsidy per patient is highest for in-patient services in public tertiary hospitals in Bangkok and per student in the closed universities; important subsidies in total amount though not per capita at the lower level are primary education, primary health care, and family planning;

* free provision doesn't equal free consumption; there are travel, opportunity and other costs which make it expensive for poor households to use even free or subsidized services.

* household demand for services and for (perceived) quality is increasing, partially as a result of increased household income and perhaps because of smaller family sizes -- the " quality/quantity " trade-off;

* there is anecdotal evidence that price is seen by some households as an indicator of efficacy (health care) and quality (education); if so free provision or subsidies may send the wrong signal, and thus be unnecessary and undesirable;

* consumer " by-pass " behavior is seen for both services; health posts are by-passed in favor of hospital out-patient departments; children live away from home to attend (perceived) better quality secondary schools.

Differences:

* there are relatively few barriers to entry by private providers in health; wealthier households or those with high opportunity costs use private practitioners;

* there are more barriers to entry of private providers in education. New schools without established reputations cannot command the same level of extra and informal payments from parents as competing schools with high reputations;

* informal pricing mechanisms and distortions exist in both public and private schools (eg: there is a high positive correlation between fees and parental donations in public secondary schools, and there are " tea money " and other payments at both public and private schools); the results are large variations in per student expenditures and in school quality ; and school quality variables, in turn, are correlated with student performance.

3.3 Trends and Demand: Education

Aggregate demand for education can be inferred from trends in enrollment, and from completion and continuation rates. A general caution should be stated at the outset. The available data are incomplete, contradictory, even counter-intuitive; for, example, the data for 1985 show a 95 percent decrease in the rate of growth of lower secondary enrollment in just one year; and there are no cohort data to distinguish repeaters and drop-outs. So the analysis and projections are necessarily rudimentary and the results only a first approximation. Still, some important trends are evident.

Retention rates, and (probably) completion rates are increasing. Table 6.4 shows enrollments in the last year of primary school and in the last year of lower secondary school. Enrollment in the last year of primary school increased 15 percent , and enrollment in the last year of upper secondary increased 24 percent between 1981 and 1985 -- faster than enrollments at these levels as a whole and

much faster than increases in the relevant age groups. If enrollment in the last year is a reliable proxy for graduation from that level, then completion rates are increasing rapidly as well. Parents may want their children to complete primary school simply to comply with the compulsory education law. Completion is also an end in itself, as is completion of lower secondary education. But completion of either level has an " option " value as well -- the option, depending on examination results, to go on to the next level.

The absolute numbers of students going on to the next levels is increasing even though continuation rates are decreasing. Tables 6.15 and 6.16 show that the proportion of public primary school graduates going on to public lower secondary decreased from 39.3 percent to 38.2 percent between 1982 and 1985, and the percentage of public lower secondary school graduates going on to public upper secondary decreased from 61.6 to 54.8 percent. But the absolute numbers going on to lower secondary increased by 10 percent, and the number going on to upper secondary increased by 12 percent. The decreasing continuation rates are thus not evidence of decreased demand for post primary academic schooling. They are a reflection, instead, of higher completion rates at levels just below. But they may also reflect the relatively high private costs and supply constraints at the secondary level which are to be discussed in the sections which follow.

If vocational schools are added, the option to continue beyond lower secondary is exercised by most students who complete lower secondary. The proportion of lower secondary graduates going on to either upper secondary or vocational school was 94 percent in 1982, 92 percent in 1983 and 86 percent in 1984 (Tables 6.15 and 6.16). Again, the absolute numbers going on increased by 11 percent, even though the continuation rates decreased.

Private institutions are enrolling a diminishing proportion of secondary students and university students. In 1985, private schools enrolled 13 percent of lower secondary students and 9 percent of upper secondary -- down from 15 percent and 12 percent respectively in 1982. Private enrollments in Bangkok are higher, 28 percent of lower secondary students and 14 percent of upper secondary students in 1985, but also decreasing. New schools face various barriers to entry.

Conversely, private schools are major providers at pre-school and vocational and technical levels where the barriers to entry are lower or nonexistent. Private schools account for almost all pre-school enrollment and for 44 percent of vocational enrollment nationally, and 69 percent of vocational enrollment in Bangkok. (Table 6.17)

Finally, simple average projections to 1995 (Table 6.5) show secondary level enrollment growing faster than the secondary school age group, particularly outside Bangkok. The projections show estimated national enrollment ratios as follows:

Projected Secondary Enrollment Ratios

	1985	1990	1995
Lower secondary	35.1	41.7	48.9
Upper secondary	15.2	19.0	22.5

(Source: Table 6.5)

Since these projections are based on problematic data, particularly for 1985, and include the affects of relatively high private costs and constrained supply at the academic secondary level, they can be viewed as in the medium to lower range of likely enrollments at these levels.

3.3.1. Pricing Policy; Degree and Distribution of Subsidies

Public primary education is available " free " throughout the Kingdom. But free provision is not free consumption. Households must still must pay for uniforms (about 100 Baht), shoes (70 Baht) , books (200 to 400 Baht) and stationary (50 Baht). (NEC estimates) Some schools provide books and stationary. For a rural family with two children in a primary school that does not, the total costs would exceed average annual health expenditures (in 1981-1982) of the entire family. (NSO, Socio-Economic Survey, 1981-1982) There may also be transportation costs in some instances, and opportunity costs particularly in the upper grades. Completion of primary education is compulsory but enforcement concentrates mainly on initial enrollment in the first grade. Despite this, and despite the costs to households, completion of primary education is increasingly a fact not just a requirement. Variation in expenditures per student and variations in quality of primary schools persist (NEC, 1982, and TDRI 1986) For example, average expenditures per student in a national sample of primary schools in 1979 were 2,050 Baht, but with a standard deviation of 4,380 Baht. (NEC, 1982, p.33.) In part, these variations reflect and reinforce patterns of demand for

(perceived) high quality places and financial " contributions " to high quality primary schools to secure admission and retention, on the part of better-off households with high aspirations for their children. These demand patterns are discussed in the sections 3.3.3 and 3.3.4 below.

Costs to households are high at the secondary level even though the available data understate informal contributions " tea money ", and other payments. In a sample of secondary schools in Bangkok, fees plus other direct costs per student in 1984-1985 averaged 5,828 Baht per year in public schools and 6,338 per year in private schools. (Parapob, 1985) If these numbers are correct, direct costs to students at this level are higher than in some of the closed universities including Chulalongkorn, Thammasat and Mahidol (Nongram, 1985). That demand for secondary education is growing faster than the age group at these prices is noteworthy. In the Bangkok sample of secondary schools, school fees and charges for materials (excluding other private payments) accounted for between 26 to 57 percent total recurrent costs per student in public schools and 42 to 89 percent in private schools.

The subsidy per student is highest at the higher education level in the closed universities. Direct private costs per student in 1982 are shown in Table 6.18. They ranged from an average of 2,455 Baht per year at Thammasat to 6,100 at King Mongkut Institute of Technology. Overall, these direct private costs averaged " less than 10 percent of the recurrent costs covered by government subsidies. " (Nongram, 1985, p. 6.) Direct private costs in the open universities are also low; annual tuition for a full time student is 700 to 1,000 Baht.

3.3.2. Barriers to Entry of New Private Schools

The principal barrier to entry of new private schools is the government tuition ceiling on private primary and secondary schools of 1,150 Baht per semester, or 2,300 Baht per year. At the higher education level, both the closed universities and the open universities are formidable competitors on price. Barriers are much lower for vocational schools. And there are no barriers to entry for kindergartens and nursery schools which, as a result, have been set up and are widely available across a broad range of prices, urban locations and quality. High quality kindergartens and nursery schools in Bangkok charge tuitions of 10,000 to 12,000 Baht a year.

The tuition ceiling at the primary and secondary levels constitutes a barrier to entry because a new school is unproven and cannot command extra payments from parents -- the up-front " tea money " , " education fund " , PTA and other " contributions " -- that established schools with

reputations for high quality and high examination scores for entry to the next level of education and/or the social and financial prominence of their graduates are able to demand. The same disadvantage may also be faced by new public secondary schools in communities where existing high quality competitors are already established or can be accessed by sending a child to stay with relatives.

Other barriers to entry consist of Ministry of Education standards related to facilities, curriculum, class size, teacher qualifications, school calendar and hours, and licensing fees. (These requirements may not constitute serious barriers to entry of quality private providers; but their consequences -- intended and otherwise -- have not been analyzed.) Private schools have at least two advantages to offset these barriers: they are exempted from land taxation, and may offer English language instruction at the beginning of primary school, which some households desire but which most government schools are unable to offer. These advantages appear to benefit primarily the established private schools; rather than permit new ones to become established.

The barriers to entry coupled with high demand for quality places (undoubtedly augmented by limitation of enrollment growth in the closed universities) appear recently to have increased prices --"tea money" prices at private schools and high donations costs and transactions costs for entry to high quality public schools such as university demonstration schools in Bangkok at least and -- as the next section will suggest -- in other municipal areas as well.

In these areas, the demand for (perceived) high quality places at the secondary level has had the familiar consequence of increasing demand and competition for places in high quality " feeder " primary schools, and even in kindergartens and nursery schools. Private tutoring and evening cram schools are also part of the response. Tea money prices as high as ten times the official tuition ceiling for a full secondary education (or full primary education) have been reported. Such " tea money " is simply the present value of the difference between the official tuition for a full secondary education -- or primary education -- at a particular school and the current market price given the constrained supply.

3.3.3. Variations in Expenditure, Quality and Performance

Thus, rationing of high quality places (or perceived high quality places) takes place officially -- but only in part -- by examinations. Informal market mechanisms are at work as well in the form of fee variations and extra payments to both public and private schools. Analysis of data from a

sample of secondary schools collected by the Office of the National Education Commission suggests that this has three consequences for schools and students.

First, there is a strong positive correlation between per capita fees and per capita donations. (r = .6620 in the municipal sample; r = .4971 in the municipal sub-district sample) High quality schools --public and private --can charge more in fees and/or charge or expect more in parental donations than other schools.

Second, as a result, there are large variations among schools in per student expenditures -- recurrent and average capital use. This finding is corroborated by Parapob (1985) who found variations in a sample of lower secondary schools in Bangkok of between 2,000 to 5,695 Baht per student per year in public schools, and 2,769 to 9,949 Baht per student per year in private schools. These variations in turn are reflected by variations in school characteristics. Schools with higher per student expenditures have lower student-teacher ratios, more experienced and better educated teachers. Regression analyses of the NEC data shows very robust relationships between per capita expenditures, school fees, parental donations and school characteristics. Adjusted R squared is .99212 in the municipal sample and .97500 in the Bangkok sample. (Tables 6.19 and 6.20)

Third, school characteristics, particularly teacher experience and education are correlated with student performance measured by grade point average (GPA). For example, in the Bangkok sample, GPAs vary with teacher experience and education, student age, and school shift. In the municipal sample, GPAs vary with teacher experience, and student age, gender (girls do better) and mother's education. (Adjusted R squared is .15 and .21, respectively). These relationships are statistically significant even though GPAs understate variations in student performance, quality of schools and the impact of school quality variables on student performance. (Tables 6.21 and 6.22)

These findings are tentative and the analysis is incomplete, but what is indicated at the secondary level, at least, is a self reinforcing pattern. Schools " charge " more because they are better or are perceived to be better. They are better because they can spend more per student. Because they spend more per student their students do better, and better students are attracted. Because their students do better the schools' reputations are enhanced. Parents try harder and contribute even more to get their children enrolled and retained. The negative corollary is that schools perceived to be of lesser quality receive less enrollment, less money, less qualified students -- in a downward pattern difficult to reverse. This may explain why high proportions

of students sampled by the NEC were living away from home while attending secondary school -- 18 percent in the sample of schools in Bangkok and 31 percent in the municipal sample.

Private schools are part of this pattern but because informal price mechanisms exist in the public schools as well, the distinction between public and private blurs. Instead of the expected difference between a merit/subsidized system and a merit/market system one finds a mix instead. But there are some differences. In the NEC municipal sample, econometric estimations (LOGIT) indicate that enrollment in (or demand for) private secondary schools was most likely among boys from small families living at home who had repeated one or more grades of primary school. (Table 6.23) Similar relationships (but less strong statistically) were found in the Bangkok and municipal sub-district samples.

Clearly, all of this is not enough information or analysis to understand the very complex demand and supply behavior that exists at the academic secondary level to say nothing of vocational schools or higher education. A working hypothesis would be that -- except for a small number of prestigious private schools in Bangkok -- private secondary schools are second choice institutions; second to high quality public schools for parents with high aspirations for children who may not meet the merit criteria of the best public schools, but preferred to lesser quality and lower (informal) price public alternatives. A more important hypothesis would be that the current mixed system at the secondary level provides neither the benefits of a market system in terms of supply nor of a merit system in terms of quality or equity.

3.4 Trends and Demand: Health Services

Data on health expenditures, trends and demand are more complete and reliable than the education data. This section analyzes aggregate health expenditures, sources, costs, subsidies and cost recovery, and private expenditure and demand patterns.

3.4.1 Total Expenditures for Health Services and Medical Care

Total expenditures for health services and medical care have grown rapidly in real terms in recent years: from 29,183 million Baht in 1979 to 41,771 million Baht in 1983. 1/ They have grown from 3.5 percent of GNP to 4.6 percent,

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1
These and all other Baht figures presented in this section have been converted to 1983 Baht unless otherwise noted.

and from 633 Baht per capita to 845 Baht in the years 1979 to 1983. By way of comparison, the percentage of GNP spent on health in three other countries for which data are available was 3.2 percent in Pakistan in 1981-82, 3.5 percent in Sri Lanka in 1982, and 5.3 percent in Zimbabwe in 1980-81. 1/ The amount spent per capita in these countries in the same years were 299 Baht in Pakistan, 322 Baht in Sri Lanka and 759 Baht in Zimbabwe.

Per capita expenditures on health in Thailand between 1979 and 1983 grew at an annual rate of 7.5 percent, higher than any industrialized country. If this trend continues through 1991, expenditures will reach 6.4 to 7.9 percent of GNP (depending on assumptions about growth of the economy), or about 1,660 Baht per capita.

3.4.2 Sources of Health Sector Expenditures

Health sector expenditures in Thailand are financed by private sources, by households mainly and by corporations and other private sources. Private expenditures were 66 percent of total health expenditures in 1979 increasing to 69 percent in 1983 (Table 6.24) Again, by way of comparison, private household expenditures were 33 percent of total health expenditures in Zimbabwe, 45 percent in Sri Lanka and 58 percent in Pakistan. In Thailand, private expenditures are a high proportion of total health expenditures, while public expenditures are somewhat below the median for countries at comparable levels of per capita product. 2/ Between 1979 and 1983, MOPH and other government sources, including public sector enterprises, have been a slightly declining proportion of total health expenditures. In 1983, the MOPH accounted for 19 percent and other government sources 12 percent of the total.

1
International comparisons in this section are from: Michael H. Mills, "Health Sector financing: An Introduction to the Issues, "in, National Council for International Health, Alternative Health Delivery systems: Can They Serve the Public Interest in Third World Settings, Washington, D.C., August, 1984, pp.97-98. U.S. dollar estimates in this source were converted to Baht at a rate of $1 = 23 Baht, the rate prevailing in 1983.

2
World Bank, Thailand: Managing Public Resources for Structural Adjustment , Vol. I, August 31, 1983, p.268.

Were these trends to continue through 1991, the MOPH budget would have to more than double in real terms to remain a constant proportion of total health sector finance. In fact, the MOPH's recurrent budget allocation for fiscal year 1987, the first year of the Sixth Plan, increased by 2.9 percent in nominal terms above its fiscal 1986 budget. Yet over the past 12 months, the Medical Care Price Index (of the Ministry of Commerce) increased by 2.8 percent and the overall population by 1.7 percent. (TDRI estimates.) The real budget per capita is decreasing . If MOPH expenditures remain constant or decrease per capita, they will be a decreasing proportion of total health expenditures.

3.4.3 Allocation and Trends: MOPH and Other Government Expenditures

MOPH budget and expenditures since 1981 show an important proportional shift from urban and hospital expenditures to rural and primary health care expenditures, as follows:

Percent of MOPH Budget

	1981	1985
Bangkok	12.1	7.0
Primary Care	30.5	38.8
Secondary/Tertiary Care	60.8	52.9

Source: MOPH Budget Data

Over the four years, allocations to primary health care doubled in real terms and allocations to Bangkok decreased in absolute as well as relative terms. The proportion of the MOPH budget devoted to health promotion increased from 16.8 to 18.8 percent and the proportion devoted to communicable disease control increased from 17.7 percent to 18.6 percent.

It may be difficult for the MOPH to sustain increasing allocations to primary care. As will be clear in the sections which follow, cost recovery in MOPH hospitals is dropping and household demand for secondary and tertiary care is increasing. Other government expenditures are already primarily for hospital services in Bangkok.

3.4.4 Pricing Policy, Costs and Cost Recovery

Pricing and subsidies of publically provided health services vary by type of service, level and location. For

example, in-patient services in public tertiary hospitals are subsidized primarily for urban populations and those rural patients who can travel to them. Family planning services are subsidized primarily for the rural population.

Taking the family planning example, the money price to a majority of acceptors of the most prevalent methods has been zero. When charged, the money prices for these methods and other services have been a small fraction of their total resource costs. Time prices to acceptors have also dropped as accessibility of services and service providers has increased.

A rough estimate can be made of the subsidies provided in 1984 to new and continuing acceptors of pills and injectables; and to new acceptors of IUDs and female sterilization (ligation) by comparing the subsidized money prices (including zero) paid by acceptors of these service at government sources to private market prices for the same services. The numbers of new and continuing acceptors of pills and injectables (TDRI, 1986, pp.70-71.) who received these services free (CPS3, p. 57.) can be multiplied by the private market price of these services (CPS3, p. 58.). The number of new and continuing acceptors of these methods who paid subsidized prices can be multiplied by the difference between the average subsidized prices and the private market prices of the services. Similar calculations (from the same data sources) can be made for new acceptors of IUDs and female sterilization who received these services free or paid subsidized prices in 1984.

The calculations yield an estimate of 649 million Baht in 1984 or about $ 25 million. This is not a complete estimate of the subsidy of family planning services in 1984 for two reasons. First, other methods are not covered. Second, some acceptors receiving services from private providers received a subsidy as well -- for example, a private clinic is reimbursed by the government for a portion of the cost of female sterilization; the patient is charged the difference. $25 million is the cost of the subsidy for public provision of the four methods if private market prices are roughly equal to public unit costs. If private providers are more efficient then public ones, then the cost of the subsidy was greater than $25 million. A subsidy of $25 million was 8 percent of the total MOPH budget in 1984 -- more than expenditures for training and manpower development, research and laboratory development, food and drug control, and drug addiction combined. (Myers, et. al. 1985, p. 16.)

At the hospital level, cost recovery in MOPH hospitals appears to be decreasing as demand for services and cost per patient and per patient-day increase; i.e. the degree of subsidy appears to be increasing. The published fee structure has not been changed since 1981. Unit costs have

undoubtedly increased since 1979 -- the most recent year in which careful estimates of these costs were made. The Medical Care Price Index of the Ministry of Commerce increased by 47 percent between 1979 and 1983. Thus, unit costs may be as much as 50 percent higher in 1986 than in 1979. If so, an OPD visit to one of the larger hospitals now costs 150 Baht and an in-patient day 400 to 740 Baht. Cost recovery comparisons show a drop from 40-52 percent in 1979 to 22 percent in 1983 in the District Hospitals. Fees have not kept pace with costs. The drop may also be explained by the effect of the "Free Card" program, the spread of drug funds. and the fact that cost recovery based mainly on drug fees may recover a smaller proportion of costs associated with hospitalizations for accidents and degenerative disease.

3.4.5. Private Demand and Expenditures

Private expenditures are mainly for curative services. In all regions there is a shift in consumption with changes in income, place of residence, prices and supply, from self-treatment with purchased drugs to public sector medical care, from health centers to district or provincial hospitals and from public sector medical care to private medical care.

A high proportion of households sampled in 1979 reported illness of one or more family members in the past month --73 percent of urban households and 75 percent of rural households. In 1981 a repeat of this survey asked only if husband and/or wife were ill in the past month 45 percent of households sampled said yes. High proportions of households reporting illness sought medical care. In the one month covered by the surveys, the proportion was higher than 90 percent. These high levels of contact were prior to health cards but did include some holders of free cards. There is an "income effect" or barrier to contact with medical service in rural areas in 1981 among the households reporting illness. There was no income barrier evident in urban areas. The proportion of households in rural areas reporting illness but not seeking care was small; low incomes were a reason why they did not. The monthly expenditures for health care by households reporting illness and seeking care in 1981, ranged from 276 Baht (Northeast, rural) to 820 Baht (Central, urban; data corrected to 1983 Baht). These expenditures were high proportions of monthly income -- 13.9 percent in urban areas, 18.6 percent in rural areas. The proportions were highest in the poorer regions, reaching 24 percent of income in the rural Northeast.

As average annual health expenditures go up, the percentage spent on self-treatment with purchased drugs goes down. The total in Baht spent on drugs may still go up since public and private practitioners usually sell the

pharmaceuticals they prescribe and collect their fees in this way. But the shift of expenditure is to medical care. The following table shows this pattern :

Drug Consumption as a Percentage of Health Expenditures 1981 - 1982

	Percent Drugs	Average Health Expenditures Per Year (1983 Baht)
BMA	24	2,210
Core	17	2,639
Fringe	36	1,768
All Urban	22	1,859
Northeast Rural	43	938

Source: NSO, Socio-Economic Survey, 1981-82

Overall demand for services -- as measured by visits rather than expenditures -- is also increasing rapidly and shows similar consumption shifts. Table 6.25 shows the number of out-patient and in-patient visits per year between 1982 and 1985 by type of MOPH facility in 20 provinces. Out patient visits increased from 9.2 million to 11.5 million; in-patient days increased from 830 thousand to 1 million. Similar increases are seen in individual provinces even those such as Lamphoon where population growth was slowest during the period. Most significantly, the proportion of out-patient visits treated at the health centers was a steadily decreasing proportion of the total, from 37.4 percent of visits in 1982 to 34.4 in 1985; the proportion treated at District hospitals increased by a total of 1.4 million patients, or from 31.8 percent of out-patients to 37.6 percent.

All of these findings and trends are confirmed by income elasticities estimated from the 1981-1982 NSO Household survey data. These data were used to define three measures of demand for health services based on household expenditures, as follows:

D_t = demand for health care measured by total household expenditures for all health services.

D_p = demand for drugs (mainly self-treatment) measured by expenditures for drugs in drug stores

D_m = demand for medical care measured by expenditures for public and/or private care. (these expenditures almost always include the cost of pharmaceuticals prescribed)

The income elasticity of demand measured by any of these variables is, simply, the percentage change in demand which results from a one percent change in household income. If the estimated elasticity is greater than one, then demand (expenditures) will increase faster than income. Estimated elasticities for 1981-82, are as follows:

	D_t	D_p	D_m
Kingdom	0.25	-0.69	1.62
Bangkok	1.21	0.07	2.05
Other urban	0.51	-0.29	1.68
Rural	0.64	0.28	1.35

Although subject to many limitations, these estimates are consistent with findings in other countries of household income elasticities greater than one for a certain range of per capita income. (Musgrove, 1983) It is noteworthy that in Thailand the estimates for medical care exceed 1.5 nationally and in all urban areas, and 2.0 in Bangkok.

If average household incomes increase by 3.5 percent per year between 1982 and 1991 -- a 36 percent increase in real terms, then the estimates suggest that household demand for medical care measured by expenditures will increase by 48 percent in rural areas, 60 percent in cities other than Bangkok and 74 percent in Bangkok. The increases could be even greater as the pattern of illness shifts increasingly from infections to degenerative diseases, and household expenditure patterns in rural areas and smaller cities evolve in the direction of the Bangkok pattern over the ten-year period. Even if the estimates turn out to be 20 to 25 percent too high, demand for medical care will still increase faster than household income in all regions, rural and urban. The MOPH, as the major public provider of medical care outside of Bangkok, may face the prospect of having to devote an increasing proportion of its budget to secondary and tertiary care.

4. MANAGEMENT AND POLICY ISSUES

The management and policy issues discussed in this section relate to prices, subsidies, and private provision, and alternatives which might improve quality, equity and efficiency. The issues involved are those identified in the analysis in the preceding sections. Since that analysis was based on available data and the data permit only tentative conclusions, the management and policy option should likewise be considered as tentative in health -- where the data-base is reasonably good -- and as not much more than hypotheses or questions in education -- where the data base is weak.

4.1 Education

4.1.1 Data and Analysis

Indeed, the first and basic management need in education is for an improved data base to permit accurate assessment of the how, and how well, the system is operating, including both internal and external efficiency. The excellent work of the NEC is based mainly on sample surveys. But sample surveys should supplement not substitute for good information on the system as a whole. In particular, there should be cohort data on enrollment, promotion, repetition and drop-outs, information on school characteristics and student performance, and data on the annual costs to parents and the schools of educating a child by type, level and characteristics of schools and households. Such a data base would make possible:

* identification of persisting problems of quality, access and equity

* analysis of the determinants of educational quality, and of retention and promotion

* modeling and predicting changing household demand for education, including quantity and quality, and price and income elasticities for various public and private sector choices.

4.1.2 Primary Education

Attainment of near universal primary education has been a important and impressive achievement. The case for continued subsidy of primary education -- and even of some of the ancillary costs to poorer households -- is strong. (Jimenez, 1986) The remaining management issues are improving retention and graduation rates and reducing the large quality variations among primary schools. Quality improvement would reinforce trends toward completion.

Quality variations reflect per-student expenditure variations, which in turn reflect, in part, differing parental donations to schools. Can or should these donation be controlled? Should barriers to private providers for parents who are willing to spend large amounts be reduced, thus freeing public resources ? Will the public sector have the resources to make up for parental donations in schools that don't get them; and, will the public sector have the resources substantially to increase per student expenditures to reduce quality variations over the relatively long time it takes to improve school quality? Reduced enrollment pressure at the primary level because of the fertility decline will help, but by itself will not free enough resources to do the job. (TDRI, 1986)

4.1.3 Secondary and Vocational Education

The same set of questions (and others) apply to secondary education. Here, informal pricing mechanisms, quality and expenditure variations, and relatively high private costs are combined with barriers to entry by private providers. The apparent results are supply constraints, and somewhat lower demand and enrollment ratios than might otherwise be the case -- even though enrollment is (conservatively) projected to increase substantially in the next decade particularly at the lower secondary level. If past patterns prevail half or more of lower secondary graduates who go on will go to vocational schools.

A first hypothesis is that, overall, the secondary education system seems to offers neither the benefits of a market system in terms of supply nor of a merit system in terms of quality and equity. Students with good scores from families unable to make any financial donations may not get into the best public schools. Students with lower scores (but above the threshold) whose parents are willing to make large donations and/or have personal connections may be admitted. With no barriers to entry there would be greater supply and perhaps lower total prices to some households, since schools with established reputations may be accruing scarcity rents. Lower prices would in turn increase demand.

If this first hypothesis is correct, the consequences of the current system may include: fewer places and much higher prices for quality places than would be the case if barriers to entry were removed,; expenditure of public funds to create places the private market could and would supply; accrual of rents by existing high quality schools; diversion into such rents of an important source for financing of secondary education -- private households -- which will increase in importance as a financing source as the demographic transition continues; fewer overall places in secondary schools than would be the case with no barriers to

entry; reduced demand for teachers graduating from teachers' colleges and other university graduates who would be willing to teach; and high private and social costs (particularly in Bangkok) of transporting students all over the place to wherever the best quality schools in which parents have secured entry for their children happen to be located.

A second hypotheses about the secondary system (and about quality variations at both the secondary and primary levels) is that the current situation may negatively affect labor trainability and the transition of the labor force from agriculture to industry and services. High secondary academic enrollment ratios and quality are associated with and, in fact, preceded rapid industrialization particularly in the Asian NICs. What this observed relationship means is still uncertain. Some studies show that secondary schools particularly high quality schools (but not vocational schools) enhance cognitive skills and labor trainabiliy and thus incresae both private and social returns. (Sabot and Knight, 1987) Other studies argue that secondary education produces a disciplined labor force appropriate for industrial production (McGinn, et al, 1980) or serves as a signalling or screening device. Whatever the explanation, electronics assembly plants in the BMA show a strong hiring preference for (female) secondary graduates, and shortage of skilled workers was cited by a sample of Japanese firms as a major constraint to their investing in Thailand (Bangkok Post , November 11, 1986) Enrollment ratios in Thailand are still comparatively low and, at the upper level half of the students go to vocational schools which focus primarily on specific job skills, not on the cognitive skills may make workers more trainable (or more amenable to industrial discipline.) These schools are probably acting as second choice or " no other choice " substitutes for upper secondary even though their quality is questionable and their fit with labor demand (either in terms of skills or, more likely, the trainability of their graduates, or both) is weak.

If both hypotheses about secondary education and quality variations are correct then the longer term consequences of the current system may include : fewer graduates of high quality schools entering universities and the labor market; fewer graduates from secondary schools than would be the case with no barriers to entry; higher labor force participation rates in the secondary school age group than would otherwise be the case; lowered standards and/or productivity in universities; lower productivity and trainability in the labor force; reduced " bumping " in the labor market; reduced dispersal of human capital across the size distribution of firms; reduced substitution of human for physical capital; and reduced compression effects in the distribution of income.

Finally, even modest growth of secondary education and reduction of quality variations as measured by expenditure per student will be expensive. The MOE spends an average of 2,852 Baht per secondary student per year for recurrent costs (Table 6.26). High quality public schools spend up to twice as much, and private schools more than twice as much.

4.1.4 Policy Options and Cost Recovery

Two general policy options seem possible. Both have implications for private provision. Both would require better data and analysis to assess with confidence.

The first would be to reestablish public secondary education as a merit/subsidized system. Access would be determined by scores and other merit criteria. Costs to parents would be low and extra payments would be neither sought nor permitted by the school nor yield any benefits to the contributors. Barriers to entry of private providers would be removed. Students unable to get into the public system would have private alternatives of various prices and quality. (This is essentially the system in South Korea.) The proportion of students who could be accommodated in the public schools would then be a function of how many places in the public schools the MOE and other public providers such as the BMA could afford to subsidize. Cost recovery in the public schools would be reduced.

The second option, would be to decontrol fees and to remove barriers to entry of private providers. This option would acknowledge what already exists informally in some public and private secondary schools, and would -- with a lag --increase the supply of places at relatively low cost to the public budget. Indeed average cost recovery in the public schools might go up; while prices at existing schools might be driven down by elimination of scarcity rents.

With decontrol, it is reasonable to expect over the long run that schools would want both to maintain or establish reputations for quality in order to attract students and simultaneously to maximize income -- some of the income would then be used further to increase quality and to attract a bigger and better pool of applicants in the future. A probable result would be that schools would vary tuition inversely with test scores and other ability measures. (This behavior is already observed in the existing informal pricing mechanisms.) Such behavior would address some of the equity objections to decontrol but not all. Some form of public scholarships or vouchers might also be needed.

A final issue -- much debated and which will not be settled here -- is the level of fees in higher education. If serious and sustained quality improvements are to be made at the primary level, and a merit/subsidized system enrolling a

substantial and growing proportion of the secondary age population is to be reestablished, then there are only two sources of the needed money: an increased allocation and proportion of the public budget or a reallocation of some proportion of the subsidy at the higher education level to the levels below it. This is an issue which should ideally be settled before a decision is made to upgrade the teachers colleges to university status, which -- at the current subsidized prices -- will put additional stain on the MOE's budget.

4.2 Health Services

Government health budgets are constrained by reduced rates of economic growth and growth in government revenues. Utilization of subsidized institution-based curative services is increasing because of increasing household incomes and educational attainment, and the changing pattern of illness in which accidents and chronic degenerative diseases are now the leading causes of death. Public subsidy of curative services is increasingly being questioned on grounds of equity and efficiency. (Jimenez, 1986) And, the subsidy of curative services reduces resources available for public health programs -- such as vector control, EPI and primary health care -- where the economic arguments for subsidy and public provision are much more powerful.

In addition, major new preventive and promotive activities are foreseen by health professionals to deal with accidents, environmental problems (eg: pesticide use and consequences in rural areas), food and drug control, cigarette smoking, AIDS, addition of hepatitis B vaccine to the EPI program, and testing and eventual introduction of malaria vaccine(s). All of these programs also meet economic tests for subsidy and public provision.

Given this overall context, the MOPH has a number of policy options, including: selective reduction and reallocation of public subsidies; public incentives to influence the pattern of private expenditures in directions consistent with medical and public health criteria and economic efficiency and equity criteria; increased cost recovery in public hospitals; increased private provision of some curative services (with due concern for issues of quality, equity, cost and regulation) ; employer and employee supported health insurance schemes in the modern industrial sectors; and community financing schemes for primary health care development in rural areas.

4.2.1 Reduction and reallocation of subsidies

Reallocation of public subsidies would be made possible by a pooled-risk insurance scheme covering employees in the modern industrial sectors of the economy, in which costs would be shared by employers and employees and public subsidies would be reduced or eliminated. This option is under active consideration now. Among the important issues are costs, deductibles, co-payments, encouragement of private providers, and fees to be charged if public hospitals are to be included in the referral structure or among the institutions to be reimbursed by the plan. Minimizing or ending public subsidy of health services for these sectors of the economy is strongly indicated on efficiency and equity grounds and strongly resisted on political grounds. Issues of design, cost and viability are therefore critical.

Other reductions and reallocations of subsides could include those for family planning and some MCH services. There are two underlying hypotheses here. First, that it is now possible to have equal or greater national contraceptive prevalence with reduced subsidies because of changes in household educational attainment, family size preferences, income, and labor force participation. The majority of recently married women surveyed in 1984 expressed a preference for a two child family. (CPS3, 1985) Second, these household changes may mean that reduced subsidy of MCH services is also possible. Households with fewer children will devote more money, care and time to each child. (This is the so-called: " quantity/quality trade-off.")

4.2.2 User Fees, Private provision and Cost Recovery

Demand for medical care is increasing most rapidly in urban areas. As household incomes go up and the causes of morbidity and mortality shift more to accidents and degenerative diseases, demand for hospital services will increase. In Bangkok and a few other cities the private sector is able to provide first contact care and some secondary care. Where this is the case, the public sector should encourage it, not try to duplicate it. The concern should be with minimum standards, encouraging competition, and cost containment. A major job of the MOPH and other public providers in the cities is the provision of the secondary and tertiary care which -- with the exception of a few hospitals for the wealthy in Bangkok -- the private sector does not provide. Here the priority will be cost containment and cost recovery to finance increased supply.

Even in the absence of insurance schemes, there is evidence and analysis (eg: Myers, et. al., 1985) to suggest that people could afford higher fees than are currently charged at public sector health posts and hospitals. Cost recovery --in district hospitals, at least -- appears to be decreasing even though demand and utilization are increasing. Since the fees remain as a revolving fund within hospitals, higher fees could also create important management incentives and free resources to improve quality at the health post level which patients often by-pass in favor of hospitals. Fee structures in MOPH and other public hospitals should -- at a minimum --differentiate between private patients able to pay and public employees entitled to hospital services at subsidized rates as part of their employee compensation.

A two tier fee structure could be adopted (particularly in urban areas) to create incentives for households to utilize local public health posts or clinics for first contact services, and generate increased cost recovery from those who by-pass the health post and go directly to secondary or tertiary hospitals. Those who go first to the health post and then to the next level with a referral slip -- if the health post cannot provide the needed services -- are charged a fee which reflects the full degree of subsidy which the public authority involved is able to provide. Those who by-pass the referral structure are charged full cost (recurrent and capital).

4.2.3. Subsidy or Partial Subsidy of Curative Care and Other Services

For poor families some subsidy of care is necessary. (" Stop loss " insurance or other financial protection in catastrophic cases is also needed .) One concern in urban areas is that families in the fringe areas and slums of Bangkok and in low income occupations in other cities are in some ways worse off than rural families with respect to health services. They are able to spend less for health care, and spend as much or a greater proportion of it on pharmaceuticals than many of their rural counterparts. Low income families in the cities cannot afford to use available private clinics for first-contact care. They self-treat with drugs, or go to the out-patient departments of large public or charity hospitals -- often distant and always with long and increasing waiting lines. The average cost to these hospitals of attending to one out-patient is estimated to be at least 150 Baht. This is more than a modest private clinic would charge the same patient for a comparable visit. It is thus a priority to analyze how an urban health insurance or primary care voucher system might be structured to encourage use of preventive services and enable first-contact curative care for the urban poor to be supplied mainly by the private sector.

In rural areas, Thailand has been a major and successful innovator in the development of a voluntary pre-paid insurance scheme -- the " health card " program -- and various revolving fund mechanisms for support of primary health care.

The health card scheme has continuing and predictable problems of voluntary pre-payment schemes any where. The poor do not to buy in because current income is too valuable. Some of the wealthier (and healthier) households select out and self-insure instead. But the scheme offers enormous promise if it can be made to work, even with some continuing subsidy of hospital services at the upper level of the referral structure.

There are numerous experiments with mechanisms for mobilizing community finance (and commitment) for primary health care services. Most common and most successful are revolving funds to provide essential drugs. There are also funds to support nutrition and sanitation services and multipurpose funds to support PHC and other community development activities. The variations are many. Existing research on these activities is cautiously optimistic about the potential for mobilization of significant and self-sustaining resources for primary health care activities. The strength of these mechanisms -- particularly of the multipurpose models -- is that they implicitly recognize that income and health variations within communities can be as large as differences between communities. The funds provide a mechanism for community subsidy or cross subsidy of services -- such as supplemental feeding of malnourished children -- needed by the less fortunate households in the community.

Table 6.1

EDUCATIONAL ATTAINMENT BY AREA AND GENDER

SEX : MALE

CODE	EDUCATION	NATIONAL 1977	NATIONAL 1981	NATIONAL 1984	MUNICIPAL 1977	MUNICIPAL 1981	MUNICIPAL 1984	NON-MUNICIPAL 1977	NON-MUNICIPAL 1981	NON-MUNICIPAL 1984
0	<7 Yrs old	20.68	17.52	16.51	17.08	17.84	17.13	21.29	17.46	16.39
1	None	9.20	6.71	4.22	6.42	4.60	3.29	9.68	7.09	4.40
2	Less than p4	15.62	13.90	14.53	11.25	11.54	11.24	16.37	14.33	15.14
3	Lower Elementary	42.94	46.97	40.96	29.74	28.37	24.59	45.20	50.36	44.00
4	Upper Elementary	4.84	5.52	11.89	10.93	9.51	11.91	3.80	4.79	11.88
5	Lower Secondary	3.52	4.35	5.11	11.33	11.24	11.97	2.19	3.10	3.84
6	Upper Secondary	0.73	1.11	1.29	3.94	4.66	4.65	0.18	0.46	0.67
7	Lower Vocational	0.00	0.01	0.01	0.00	0.01	0.04	0.00	0.01	0.00
8	Upper Vocational	1.00	1.55	2.25	4.56	5.73	7.30	0.39	0.79	1.31
9	Academic	0.37	0.56	0.76	2.14	3.17	3.61	0.07	0.09	0.23
10	Technical Vocational	0.15	0.29	0.52	0.79	1.21	1.75	0.04	0.13	0.29
11	Teacher	0.77	1.05	1.25	1.41	1.42	1.60	0.66	0.98	1.18
12	Short Vocational	0.00	0.01	0.02	0.02	0.05	0.04	0.00	0.01	0.02
13	Other	0.02	0.34	0.33	0.10	0.37	0.47	0.01	0.34	0.31
14	Unknown	0.13	0.10	0.36	0.29	0.28	0.43	0.11	0.07	0.35
TOTAL	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

SEX : FEMALE

CODE	EDUCATION	NATIONAL 1977	NATIONAL 1981	NATIONAL 1984	MUNICIPAL 1977	MUNICIPAL 1981	MUNICIPAL 1984	NON-MUNICIPAL 1977	NON-MUNICIPAL 1981	NON-MUNICIPAL 1984
0	<7 Yrs old	19.84	16.69	16.17	15.72	16.85	16.47	20.57	16.66	16.12
1	None	14.67	11.89	9.60	11.25	8.91	7.86	15.27	12.44	9.93
2	Less than p4	14.79	13.95	14.13	11.74	11.69	10.82	15.32	14.37	14.77
3	Lower Elementary	42.69	47.24	41.24	34.53	32.84	29.57	44.12	49.92	43.46
4	Upper Elementary	3.77	4.19	10.19	8.82	8.19	10.55	2.88	3.45	10.12
5	Lower Secondary	1.89	2.32	3.45	7.41	7.16	8.22	0.93	1.42	2.54
6	Upper Secondary	0.53	0.86	1.01	2.89	3.70	3.53	0.12	0.33	0.53
7	Lower Vocational	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01
8	Upper Vocational	0.63	1.23	1.67	3.29	4.92	6.23	0.17	0.54	0.81
9	Academic	0.23	0.44	0.52	1.36	2.44	2.62	0.04	0.07	0.12
10	Technical Vocational	0.07	0.14	0.27	0.40	0.69	1.01	0.01	0.03	0.14
11	Teacher	0.74	0.88	1.16	2.29	2.09	2.38	0.47	0.65	0.92
12	Short Vocational	0.04	0.05	0.07	0.09	0.24	0.18	0.03	0.02	0.05
13	Other	0.01	0.05	0.04	0.03	0.14	0.13	0.00	0.03	0.02
14	Unknown	0.09	0.07	0.46	0.19	0.13	0.42	0.07	0.06	0.46
TOTAL	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

SEX : BOTH

CODE	EDUCATION	NATIONAL 1977	NATIONAL 1981	NATIONAL 1984	MUNICIPAL 1977	MUNICIPAL 1981	MUNICIPAL 1984	NON-MUNICIPAL 1977	NON-MUNICIPAL 1981	NON-MUNICIPAL 1984
0	<7 Yrs old	20.26	17.10	16.34	16.40	17.34	16.80	20.93	17.06	16.25
1	None	11.92	9.28	6.90	8.84	6.76	5.59	12.46	9.75	7.14
2	Less than p4	15.21	13.93	14.33	11.49	11.62	11.03	15.85	14.35	14.95
3	Lower Elementary	42.82	47.11	41.10	32.14	30.61	27.10	44.66	50.14	43.73
4	Upper Elementary	4.31	4.86	11.04	9.87	8.85	11.23	3.35	4.12	11.01
5	Lower Secondary	2.71	3.34	4.29	9.36	9.19	10.08	1.56	2.27	3.20
6	Upper Secondary	0.63	0.98	1.15	3.41	4.18	4.08	0.15	0.40	0.60
7	Lower Vocational	0.00	0.01	0.01	0.00	0.01	0.02	0.00	0.01	0.01
8	Upper Vocational	0.82	1.39	1.96	3.92	5.32	6.76	0.28	0.67	1.06
9	Academic	0.30	0.50	0.64	1.75	2.80	3.11	0.05	0.08	0.17
10	Technical Vocational	0.11	0.22	0.40	0.59	0.95	1.37	0.03	0.08	0.21
11	Teacher	0.76	0.96	1.20	1.85	1.76	1.99	0.57	0.82	1.05
12	Short Vocational	0.02	0.03	0.05	0.06	0.14	0.11	0.01	0.01	0.04
13	Other	0.02	0.20	0.19	0.06	0.26	0.30	0.01	0.18	0.17
14	Unknown	0.11	0.09	0.41	0.24	0.20	0.42	0.09	0.06	0.41
TOTAL	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Sources : Calculated from National Labor Force Surveys, 1977, 1981 and 1984.

Table 6.2

EDUCATIONAL ATTAINMENT BY REGION AND GENDER

SEX : MALE

CODE	EDUCATION	NORTH 1977	NORTH 1981	NORTH 1984	NORTHEAST 1977	NORTHEAST 1981	NORTHEAST 1984	SOUTH 1977	SOUTH 1981	SOUTH 1984	CENTRAL 1977	CENTRAL 1981	CENTRAL 1984
0	<7 Yrs old	19.33	15.65	14.96	23.11	19.04	17.68	21.35	17.68	17.39	19.88	16.65	15.01
1	None	12.10	9.54	6.48	7.80	5.96	2.59	13.16	8.42	6.82	7.68	5.34	3.91
2	Less than p4	18.46	14.25	14.90	15.05	13.96	15.07	16.87	17.09	16.75	15.34	13.14	14.06
3	Lower Elementary	43.07	48.13	43.76	47.46	52.88	45.35	37.23	40.13	35.99	44.00	48.18	41.80
4	Upper Elementary	3.45	5.20	11.25	3.18	3.42	12.53	5.38	6.59	9.99	6.01	6.88	12.60
5	Lower Secondary	2.21	3.37	3.74	2.10	2.55	3.11	3.58	5.36	6.60	3.93	4.73	5.73
6	Upper Secondary	0.16	0.55	0.63	0.13	0.44	0.69	0.30	0.89	0.82	0.56	0.79	0.92
7	Lower Vocational	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.02	0.03
8	Upper Vocational	0.47	1.39	1.26	0.32	0.54	0.91	0.76	1.47	2.18	0.88	1.51	2.94
9	Academic	0.08	0.22	0.29	0.03	0.08	0.23	0.22	0.27	0.58	0.21	0.24	0.46
10	Technical Vocational	0.10	0.16	0.36	0.04	0.09	0.19	0.05	0.32	0.61	0.14	0.33	0.59
11	Teacher	0.51	1.13	1.51	0.70	0.85	1.27	1.07	1.50	1.51	1.03	1.24	0.95
12	Short Vocational	0.00	0.01	0.08	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
13	Other	0.02	0.33	0.31	0.01	0.12	0.12	0.01	0.12	0.42	0.04	0.87	0.59
14	Unknown	0.05	0.09	0.47	0.07	0.04	0.24	0.03	0.15	0.32	0.30	0.09	0.39
TOTAL	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

SEX : FEMALE

CODE	EDUCATION	NORTH 1977	NORTH 1981	NORTH 1984	NORTHEAST 1977	NORTHEAST 1981	NORTHEAST 1984	SOUTH 1977	SOUTH 1981	SOUTH 1984	CENTRAL 1977	CENTRAL 1981	CENTRAL 1984
0	<7 Yrs old	19.62	15.39	13.97	22.00	17.73	17.46	21.09	18.10	18.14	18.43	15.55	15.25
1	None	19.45	16.02	14.10	11.55	9.24	6.27	20.42	15.16	13.07	13.79	12.35	10.05
2	Less than p4	16.40	14.24	14.99	14.42	14.27	14.67	15.54	16.03	14.38	15.36	13.23	14.14
3	Lower Elementary	39.76	46.58	40.76	47.87	53.73	46.85	35.57	40.20	36.26	43.83	47.56	40.56
4	Upper Elementary	2.81	3.59	10.06	2.31	2.64	10.05	4.49	4.71	10.06	4.44	5.29	10.71
5	Lower Secondary	1.16	1.87	2.56	1.00	0.93	2.08	1.44	2.59	3.69	1.81	2.74	4.16
6	Upper Secondary	0.14	0.40	0.55	0.08	0.25	0.46	0.15	0.49	0.55	0.14	0.65	0.90
7	Lower Vocational	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.00
8	Upper Vocational	0.19	0.83	0.84	0.14	0.37	0.59	0.35	1.32	1.48	0.52	0.95	1.83
9	Academic	0.03	0.11	0.23	0.01	0.06	0.07	0.04	0.12	0.32	0.11	0.23	0.22
10	Technical Vocational	0.02	0.08	0.23	0.01	0.03	0.18	0.03	0.10	0.24	0.04	0.11	0.11
11	Teacher	0.37	0.78	1.20	0.46	0.60	0.96	0.82	1.01	1.12	1.13	1.10	1.31
12	Short Vocational	0.03	0.04	0.05	0.00	0.02	0.00	0.02	0.07	0.20	0.09	0.02	0.02
13	Other	0.00	0.03	0.05	0.00	0.01	0.02	0.00	0.03	0.06	0.01	0.09	0.01
14	Unknown	0.01	0.03	0.42	0.12	0.03	0.34	0.04	0.08	0.42	0.10	0.12	0.73
TOTAL	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

SEX : BOTH

CODE	EDUCATION	NORTH 1977	NORTH 1981	NORTH 1984	NORTHEAST 1977	NORTHEAST 1981	NORTHEAST 1984	SOUTH 1977	SOUTH 1981	SOUTH 1984	CENTRAL 1977	CENTRAL 1981	CENTRAL 1984
0	<7 Yrs old	19.48	15.52	14.47	22.55	18.39	17.57	21.23	17.89	17.76	19.16	16.11	15.13
1	None	15.73	12.75	10.26	9.68	7.60	4.43	16.72	11.73	9.89	10.71	8.80	6.93
2	Less than p4	17.44	14.24	14.95	14.74	14.17	14.87	16.22	16.57	15.59	15.35	13.18	14.10
3	Lower Elementary	41.43	47.36	42.27	47.67	53.31	46.10	36.42	40.17	36.12	43.91	47.87	41.19
4	Upper Elementary	3.13	4.40	10.66	2.75	3.03	11.23	4.94	5.67	10.02	5.23	6.09	11.68
5	Lower Secondary	1.70	2.62	3.15	1.55	1.74	2.59	2.53	4.00	5.17	2.88	3.74	4.96
6	Upper Secondary	0.15	0.47	0.59	0.10	0.34	0.58	0.22	0.69	0.69	0.45	0.72	0.91
7	Lower Vocational	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.02	0.01
8	Upper Vocational	0.33	1.11	1.05	0.23	0.45	0.75	0.56	1.40	1.84	0.70	1.23	2.40
9	Academic	0.05	0.16	0.26	0.02	0.07	0.15	0.13	0.20	0.45	0.16	0.23	0.34
10	Technical Vocational	0.06	0.12	0.29	0.03	0.06	0.18	0.04	0.21	0.43	0.09	0.23	0.35
11	Teacher	0.44	0.96	1.36	0.58	0.73	1.11	0.95	1.26	1.32	1.08	1.17	1.13
12	Short Vocational	0.02	0.03	0.06	0.00	0.02	0.00	0.01	0.03	0.10	0.04	0.01	0.02
13	Other	0.01	0.18	0.18	0.00	0.07	0.07	0.00	0.07	0.24	0.02	0.49	0.31
14	Unknown	0.03	0.06	0.44	0.10	0.04	0.29	0.03	0.11	0.37	0.20	0.10	0.56
TOTAL	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Sources : Calculated from National Labor Force Surveys, 1977, 1981 and 1984.

Table 6.3

EDCATIONAL ATTAINMENT BY AREA AND GENDER: BANGKOK AND NON-BANGKOK

SEX : MALE

CODE	EDUCATION	BANGKOK 1977	BANGKOK 1981	BANGKOK 1984	NON-BANGKOK 1977	NON-BANGKOK 1981	NON-BANGKOK 1984
0	<7 Yrs old	15.86	17.59	17.34	21.22	17.51	16.40
1	None	6.21	4.34	2.90	9.54	7.00	4.39
2	Less than p4	10.65	10.87	10.59	16.18	14.28	15.04
3	Lower Elementary	31.91	31.48	26.51	44.19	48.90	42.84
4	Upper Elementary	10.50	9.09	11.85	4.21	5.07	11.89
5	Lower Secondary	10.34	10.12	10.96	2.76	3.64	4.35
6	Upper Secondary	4.91	5.13	5.44	0.26	0.61	0.75
7	Lower Vocational	0.00	0.00	0.02	0.00	0.01	0.01
8	Upper Vocational	4.98	5.26	6.94	0.55	1.09	1.64
9	Academic	2.73	3.67	3.90	0.11	0.18	0.35
10	Technical Vocational	0.81	1.09	1.56	0.08	0.20	0.38
11	Teacher	0.71	0.66	0.97	0.78	1.10	1.29
12	Short Vocational	0.01	0.04	0.04	0.00	0.01	0.02
13	Other	0.10	0.36	0.45	0.02	0.34	0.32
14	Unknown	0.30	0.30	0.53	0.11	0.08	0.34
TOTAL	Total	100.00	100.00	100.00	100.00	100.00	100.00

SEX : FEMAL

CODE	EDUCATION	BANGKOK 1977	BANGKOK 1981	BANGKOK 1984	NON-BANGKOK 1977	NON-BANGKOK 1981	NON-BANGKOK 1984
0	<7 Yrs old	14.36	16.29	15.65	20.49	16.74	16.24
1	None	10.69	8.36	7.54	15.14	12.35	9.88
2	Less than p4	10.79	11.19	10.86	15.26	14.31	14.58
3	Lower Elementary	37.11	35.29	31.65	43.35	48.79	42.55
4	Upper Elementary	8.42	7.57	10.11	3.22	3.75	10.20
5	Lower Secondary	7.07	6.45	7.61	1.28	1.79	2.88
6	Upper Secondary	3.64	4.34	4.06	0.16	0.41	0.59
7	Lower Vocational	0.00	0.00	0.00	0.00	0.01	0.01
8	Upper Vocational	3.73	4.97	6.22	0.27	0.74	1.05
9	Academic	1.85	2.95	3.03	0.04	0.12	0.18
10	Technical Vocational	0.46	0.67	0.95	0.02	0.07	0.18
11	Teacher	1.59	1.40	1.46	0.64	0.81	1.11
12	Short Vocational	0.07	0.21	0.28	0.03	0.03	0.04
13	Other	0.04	0.14	0.13	0.00	0.03	0.03
14	Unknown	0.20	0.15	0.45	0.08	0.06	0.46
TOTAL	Total	100.00	100.00	100.00	100.00	100.00	100.00

SEX : BOTH

CODE	EDUCATION	BANGKOK 1977	BANGKOK 1981	BANGKOK 1984	NON-BANGKOK 1977	NON-BANGKOK 1981	NON-BANGKOK 1984
0	<7 Yrs old	15.10	16.93	16.48	20.86	17.13	16.32
1	None	8.48	6.38	5.26	12.32	9.65	7.12
2	Less than p4	10.72	11.03	10.73	15.72	14.29	14.81
3	Lower Elementary	34.55	33.42	29.12	43.77	48.84	42.70
4	Upper Elementary	9.44	8.32	10.97	3.72	4.42	11.05
5	Lower Secondary	8.68	8.26	9.26	2.03	2.72	3.62
6	Upper Secondary	4.26	4.73	4.74	0.21	0.51	0.67
7	Lower Vocational	0.00	0.00	0.01	0.00	0.01	0.01
8	Upper Vocational	4.35	5.12	6.57	0.41	0.92	1.35
9	Academic	2.28	3.30	3.46	0.08	0.15	0.26
10	Technical Vocational	0.63	0.88	1.25	0.05	0.13	0.28
11	Teacher	1.16	1.04	1.22	0.71	0.96	1.20
12	Short Vocational	0.04	0.12	0.16	0.02	0.02	0.03
13	Other	0.07	0.25	0.28	0.01	0.19	0.17
14	Unknown	0.25	0.22	0.49	0.10	0.07	0.40
TOTAL	Total	100.00	100.00	100.00	100.00	100.00	100.00

Sources : Calculated from National Labor Force Surveys, 1977, 1981 and 1984.

Table 6.4

NUMBER OF STUDENTS BY LEVEL

THAILAND	1981	1982	1983	1984	1985
			THAILAND		
P6	982,664	1,051,592 7.01	1,196,085 13.74	1,107,371 -7.42	1,129,643 2.01
M1	409,953	418,313 2.04	435,979 4.22	492,336 12.93	442,929 -10.04
M3	325,564	358,979 10.26	380,563 6.01	391,199 2.79	402,558 2.90
M4	169,960	184,458 8.53	203,975 10.58	204,834 0.42	200,335 -2.20
VOCATION 1	(PRIV) 70,000	139,966 99.95	133,389 -4.70	144,887 8.62	134,819 -6.95
CONTINUATION RATE (P6-M1)		42.57	41.46	41.16	40.00
CONTINUATION RATE (M3-M4)		56.66	56.82	53.82	51.21
CONTINUATION RATE (M3-V1)		42.99	37.16	38.07	34.46
CONTINUATION RATE (M3-V1,M4)		99.65	93.98	91.90	85.67
M1(81) & M4(84)	49.97				
M1(82) & M4(85)	47.89				

Table 6.5 Secondary Education Enrollment and Projections

THAILAND	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
LOWER SECONDARY	1169704	1221034	1302131	1306251	1353046	1401518	1451726	1503733	1557603	1613403	1671202	1731071	1793085	1857321
GROWTH RATES (%)		4.20	6.23	0.32										
A.V. GROWTH RATE (%)				3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
UPPER SECONDARY	498644	533114	557095	564109	586699	610194	634630	660045	686477	713967	742559	772296	803223	835389
GROWTH RATES (%)		6.47	4.30	1.24										
A.V. GROWTH RATE (%)				4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
TOTAL	1668348	1754148	1859226	1870360	1939746	2011712	2086356	2163778	2244080	2327370	2413761	2503367	2596308	2692710

BANGKOK	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
LOWER SECONDARY	204571	205679	223388	225679	233335	241251	249435	257897	266646	275691	285044	294714	304711	315049
GROWTH RATES (%)		0.54	8.61	1.03										
A.V. GROWTH RATE (%)				3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39
UPPER SECONDARY	92622	102657	98088	96724	98334	99970	101634	103326	105046	106794	108571	110378	112215	114083
GROWTH RATES (%)		10.83	-4.45	-1.39										
A.V. GROWTH RATE (%)				1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66
TOTAL	297193	308336	321476	322403	331669	341221	351069	361222	371691	382485	393615	405092	416927	429131

NON-BANGKOK	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
LOWER SECONDARY	965133	1015355	1078743	1080572	1122412	1165872	1211016	1257907	1306613	1357206	1409757	1464344	1521044	1579939
GROWTH RATES (%)		5.20	6.24	0.17										
A.V. GROWTH RATE (%)				3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87
UPPER SECONDARY	406022	430457	459007	467385	489938	513579	538360	564338	591569	620114	650036	681402	714282	748748
GROWTH RATES (%)		6.02	6.63	1.83										
A.V. GROWTH RATE (%)				4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.83
TOTAL	1371155	1445812	1537750	1547957	1612350	1679451	1749376	1822244	1898182	1977319	2059793	2145746	2235325	2328687

ENROLLMENT RATIOS FOR THAILAND	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
LOWER SECONDARY														
POP				3723000					3736000	0.35				3801000
ENROLLMENT	1169704	1221034	1302131	1306251	1353046	1401518	1451726	1503733	1557603	1613403	1671202	1731071	1793085	1857321
RATIOS				35.09					41.69					48.86
UPPER SECONDARY														
POP				3710000					3619000	-2.45				3714000
ENROLLMENT	498644	533114	557095	564109	586699	610194	634630	660045	686477	713967	742559	772296	803223	835389
RATIOS				15.21					18.97					22.49
TOTAL														
POP				7433000					7355000	-1.05				7515000
ENROLLMENT	1668348	1754148	1859226	1870360	1939746	2011712	2086356	2163778	2244080	2327370	2413761	2503367	2596308	2692710
RATIOS				25.16					30.51					35.83

Source of data: NEC; population projection, TDRI.

Table 6.6
Educational Enrollments

THAILAND

	1982	1983	1984	1985
Number of Students	2226950	2370582	2423814	2426010
PUBLIC	1734490	1861877	1925377	1960310
- Lower Secondary	988402	1045194	1121501	1137596
Rate of Change		5.745840	7.300749	1.435130
- Upper Secondary	438637	475252	501893	513015
Rate of Change		8.347449	5.605657	2.216010
- Vocational Schools	307451	341431	301983	309699
Rate of Change		11.05216	-11.5537	2.555110
PRIVATE	492460	508705	498437	465700
- Lower Secondary	181302	175840	180630	168655
Rate of Change		-3.01265	2.724067	-6.62957
- Upper Secondary	60007	57862	55202	51094
Rate of Change		-3.57458	-4.59714	-7.44175
- Vocational Schools	251151	275003	262605	245951
Rate of Change		9.497075	-4.50831	-6.34184
Proportion between Public:Private	22.11365	21.45907	20.56416	19.19612

Table 6.7

Estimated Crude Death

Year	CDR per thousand
1945 - 1949[1]	29.4
1950 - 1954[1]	22.0
1947 - 1956[1]	20.0
1960[2]	13.5
1964 - 1965[2]	10.9
1965 - 1970[2]	10.4
1970 - 1975[3]	9.3
1975 - 1980[3]	8.4
1980 - 1985[4]	7.8

Sources:

1 Jean Bourgeois - Pichat, "An Attempt to Appraise the Accuracy of Demographic Statistics for an Under-Development country: Thailand", United Nations seminar on Evaluation and Utilization of Population Census Data in Asia and the Far East, Bombay, India, June - July, 1960.

2 Economic commission for Asia and the Far East, "Comparative Study of Mortality Trends in ECAFE countries" Asian Population Series, No. 14, Bangkok, 1973.

3 NESDB, Working Group on Population Projections, "Population Projections for Thailand: Whole Kingdom, 1970 - 2005".

4 NESDB, Working Group on Population Projections, "Population Projections for Thailand: Whole Kingdom, 1980 - 2015".

Table 6.8

Life Expectancy at Birth

Period	Life expectancy at birth	
	Males	Female
1937 - 1947 [1]	37.0	39.7
1947 - 1948 [2]	48.7	51.9
1959 - 1961 [3]	53.6	58.7
1964 - 1965 [4]	55.9	62.0
1969 - 1971 [5]	57.7	61.5
1970 - 1979 [6]	57.7	61.6
1974 - 1976 [7]	58.0	63.8
1975 - 1980 [6]	59.3	63.2
1980 - 1985 [6]	60.3	66.3

Sources:

1 Based on data collected by the Demographic and Economic Survey of Thailand, Central Statistical Office, Bangkok, 1956.

2 Bandhi Kantabutra and Sangam Chaixanien, Life Table for Thailand 1947 - 1948, National Statistical Office, Bangkok.

3 UN Department of International Economic and Social Affairs, Demographic Yearbook of 1966, New York, Table 21.

4 National Statistical Office, Report on the Survey of Population Change 1964 - 1965, Bangkok, 1960. Excluding BKK. and Thonburi.

5 Javalaksana Rachapaetayakom, "Mortality of Life Expectancy of the Thai Population in 1960 - 1971" NESDB, Population and Manpower Planning Division, Bangkok, July, 1975.

6 NESDB, Working Group on Population Projections, "Population Projections for Thailand: Whole Kingdom and Regions 1970 - 2005", and "Population Projections for Thailand Whole Kingdom and Regions 1980 - 2015".

7 National Statistical Office, Report the Survey of Population Change 1974 - 1976, Bangkok, 1978.

Table 6.9

Mortality Rates by Region, 1964/65, 1974/76 and 1983

Region	Infant Mortality Rate per 1,000			Crude Death Rate per 1,000	
	1964/65 [1]	1974/76 [1]	1983 [2]	1964/65 [1]	1974/76 [1]
Whole Kingdom	84.3	51.8	45.5	10.8	8.6
Bangkok	-	25.2	-	-	4.3
Central	94.0	48.9	-	10.4	6.6
Northeast	83.4	52.1	56.6	11.4	9.8
North	96.5	74.0	51.8	12.4	9.9
South	48.5	51.4	45.1	8.6	10.2

Sources:

[1] National Statistical Office, Report of the Survey of Population Change, 1974-1976, Table 10, p. 50.

[2] Data from the 1984 Mortality Survey, Ministry of Public Health

Table 6.10

Nutrition Surveillance of Preschool Children
March 1981

Region	Preschool Children	Nutrition Status (%) Normal	First Degree Malnutrition	Second Degree Malnutrition	Third Degree Malnutrition
Northeast	434,090	188,160	170,442	65,635	9,853
		43.35	39.26	15.12	2.27
North	68,693	32,208	25,370	9,361	1,754
		46.89	36.93	13.63	2.55
South	65,575	35,142	21,826	7,380	1,227
		53.59	35.28	1.25	1.87
Central	71,530	43,097	21,624	5,859	950
		60.25	30.23	8.19	1.33
East-Central	32,009	19,090	9,349	2,930	640
		59.64	29.21	9.15	2
Total	671,897	317,697	248,611	91,165	14,424
	%	47.28	37	13.57	2.15

Nutrition Surveillance of Preschool Children
March 1981

Region	Preschool Children	Nutrition Status (%) Normal	First Degree Malnutrition	Second Degree Malnutrition	Third Degree Malnutrition
Northeast	580,352	56.18	34.35	8.11	1.36
North	250,974	70.41	24.76	4.46	0.38
South	151,064	65.39	27.71	6.37	0.52
Central	189,317	77.1	20.64	2.15	0.11
East-Central	98,686	76.39	20.25	3.07	0.29
Total	1,270,393	64.77	28.53	5.9	0.8

Source: Nutrition Division, Ministry of Public Health.

Table 6.11

Leading Cause of Death of the Total Population, 1957-1983
(Rate per 100,000 population)

Cause of Death	1957	1961	1965	1969	1973	1977	1981	1983
Total	896.4	778.5	709.7	722.5	607.4	545.2	504.2	510.7
1. Diseases of the heart	15.4	17.8	16.2	15.2	18.1	16.1	31.4	33.7
2. Accidents poisoning and violence	15.2	18	22.9	25.5	30.4	35	34.6	35.4
3. Malignant neoplasm (all forms)	5.9	8.6	11.9	11.7	15.6	19.3	24.7	26.9
4. Tuberculosis of Respiratory system	45.7	31.2	25.1	23.3	16.3	16	11.8	11.0
5. Pneumonia	50.9	28.5	22.5	15.9	15.7	12.9	8.9	10.0
6. Malaria	43.0	24.5	14.8	10.2	13.6	11.0	8.6	5.9
7. Diarrhoeal diseases	53.2	31.2	26.2	24.3	18.2	13.3	6.7	5.8
8. Diseases of the Stomach and uodenum	6.7	4.6	4.0	6.4	7.1	7.6	4.5	3.9
9. Nutritional difficiency	15.2	14.5	14.7	10.5	6.1	2.4	1.7	1.4
10. Diseases of pregnancy child birth and puerperium	15.8	13.5	11.4	8.7	5.5	3.2	1.8	1.3
11. Others	628.4	586.2	539.9	570.9	460.8	408.4	369.5	375.2

Source: Health Statistics Division, 1985 Health Statistics 1957-1983
Bangkok: Ministry of Public Health

Table 6.12

Reported cases rate of specific diseases commonly occured among children and elderly, Thailand 1971 - 1982 (per 100,000 pop.)

Notifiable Diseases	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973
Acute diarrhoeal	675.93	513.13	483.21	388.61	307.53	227.12	173.14	151.53	134.93	139.71
Food poisoning	56.88	45.76	40.77	28.03	18.47	13.48	4.25	-	-	-
Dysentery	110.54	91.76	64.54	71.66	40.06	28.46	18.70			
Enteric fever	29.09	23.35	22.32	22.28	19.58	27.40	14.88	9.47	8.06	6.37
Hepatitis	18.77	19.90	27.35	27.76	21.24	22.73	16.09	14.29	13.09	12.41
Polyamyelitis ‡	0.57	0.54	0.65	2.38	1.44	2.10	1.89	1.06	1.54	2.33
Rabies	0.42	0.45	0.53	0.52	0.50	0.53	0.45	0.36	0.35	0.37
Dengue hem. fever ‡‡	45.89	54.06	93.38	25.25	28.22	89.24	24.53	42.93	20.21	21.03
Encephalitis ‡‡	3.18	3.29	5.19	4.58	3.38	4.00	3.56	3.92	4.00	4.53
Malaria ‡‡	323.00	344.15	265.84	166.34	158.77	149.15	123.45	125.59	111.33	31.42
Diptheria ‡	2.32	1.67	4.13	4.42	3.99	5.27	5.53	4.67	4.72	4.28
Pertussis ‡	7.11	6.20	10.28	11.20	5.79	7.25	4.67	7.63	5.94	4.75
Tetanus ‡	3.86	3.87	3.91	4.40	4.38	4.55	4.17	3.74	3.70	3.73
Tuberculosis ‡	30.38	30.37	32.25	29.21	23.81	16.27	5.17	-	-	-
Total reported tifiable diseases	2,092.80	1,751.16	1,601.50	1,115.36	873.43	852.32	580.10	515.50	382.38	317.41

Sources : Ministry of Public Health, 1983. Summary Reports of Health Surveilrence Bangkok : Ministry of Public Health, Table 6.

‡ Immunizable diseases
‡‡Morquitoes borne diseases.

Table 6.13

DISTRIBUTION OF SECONDARY SCHOOLS

YEAR / DISTRICTS	1980 NO	1980 RATIO	1984 NO	1984 RATIO	% CHANGE
THAILAND	2240	100.00	2496	100.00	10.26
BANGKOK	317	14.15	348	13.94	8.91
1. Samut Prakarn, Nakon Pathom, Samut Sakorn, Patumtani Nonthaburi.	125	5.58	126	5.05	0.79
2. 4 provinces in southern borderland	57	2.54	58	2.32	1.72
3. Songkhla, Chumphon, Suratthani, Phatthalung, Nakhonsithammarat	247	11.03	277	11.10	10.83
4. Phuket, Pangnga, Ranong, Krabi, Trang	64	2.86	75	3.00	14.67
5. Samutsongkram, Kanchanaburi, Petchaburi, Prachuabkirikhan, Ratchaburi, Suphanburi	144	6.43	160	6.41	10.00
6. Lopburi, Singburi, Saraburi, Chainat, Ayutthaya	163	7.28	165	6.61	1.21
7. Uttaradit, Kamphaeng Phet, Tak, Phichit, Sukhothai, Phetchabun Nakhonsawan, Phitsanulok	195	8.71	216	8.65	9.72
8. Mae Hong Son, Phrae, Lampang, Chiang Rai, Chiang Mai, Nan, Lamphun	194	8.66	220	8.81	11.82
9. Khon Kaen, Nongkhai, Loei, Sakhon Nakhon, Udonthani	170	7.59	199	7.97	14.57
10.Yasothon, Roi-et, Nakhonphanom, Mahasalakham, Kalasin,	219	9.78	259	10.38	15.44
11. Srisaket, Chaiyaphum, Nakhon Ratchasima, Surin, Burirum	182	8.13	217	8.69	16.13
12. Trat, Nakhonnayok, Chanthaburi, Prachinburi, Chonburi Rayong, Chachoengsao	163	7.28	176	7.05	7.39
A.V.	160		179		10.47

Table 6.14

Ratio of Population to Hospital Beds During 1972 - 1982

Year	Whole Kingdom	Bangkok Metropolis	Provincial
1972	1,077.82	361.90	1,366.87
1973	1,059.40	357.61	1,344.90
1974	1,028.37	363.75	1,286.16
1975	1,021.37	371.08	1,267.61
1976	947.27	345.56	1,179.26
1977	890.30	352.64	1,079.91
1978	859.71	245.50	1,041.66
1979	838.26	352.12	1,044.10
1980	805.65	341.48	965.66
1981	801.35	361.48	962.25
1982	793.46	365.63	934.51

Note : Bed Statistics covering all public and private hospitals came from division of Health Statistics 1983. Public Health Statistics, A.D. 1977 - 1981. Bangkok Ministry of Public Health Table 3.1, p. 214; population data came from the NESDB Working Group on Population Projection for the Sixth Plan (medium level).

Source : Suchart Prosit-rathsint, et.al., "Population and Health", TDRI, Bangkok, 1985.

Table 6.15
NUMBER OF STUDENTS BY LEVEL

THAILAND	1981.00	1982.00	1983.00	1984.00	1985.00
			PUBLIC		
P6	904,679	963,888	1,106,983	1,024,414	1,046,281
		6.54	14.85	-7.46	2.13
M1	345,213	356,264	373,973	426,330	391,117
		3.20	4.97	14.00	-8.26
M3	267,058	300,137	323,831	335,606	346,009
		12.39	7.89	3.64	3.10
M4	152,811	164,411	182,883	186,586	183,856
		7.59	11.24	2.02	-1.46
VOCATION 1		69,934	72,369	79,271	76,370
			3.48	9.54	-3.66
CONTINUATION RATE (P6-M1)		39.38	38.80	38.51	38.18
CONTINUATION RATE (M3-M4)		61.56	60.93	57.62	54.78
CONTINUATION RATE (M3-V1)		26.19	24.11	24.48	22.76
CONTINUATION RATE (M3-V1,M4)		87.75	85.05	82.10	77.54
M1(81) & M4(84)	54.05				
M1(82) & M4(85)	51.61				

Table 6.16

Continuation Rates and Absolute Numbers
Public Schools

Year	Primary to Lower Secondary %	Absolute Number
1982	39.30	356,264
1983	38.80	373,973
1984	38.50	426,330
1985	38.20	391,117

	Lower to Upper Secondary %	Absolute Number
1982	61.60	164,411
1983	60.90	182,883
1984	57.60	186,586
1985	54.80	183,856

	Lower Secondary to vocational and Upper Secondary %	Absolute Number
1982	87.80	234,345
1983	85.00	255,252
1984	82.10	265,857
1985	77.60	260,226

Source : Calculated from NEC data.

Table 6.17

BANGKOK	1982	1983	1984	1985
Number of Students	497088	517294	495595	ERR
PUBLIC	292664	311386	300210	336834
- Lower Secondary	142657	147664	161139	167567
Rate of Change		3.509817	9.125446	3.989102
- Upper Secondary	78347	89894	84606	83913
Rate of Change		14.73827	-5.88248	-0.81909
- Vocational Schools	71660	73828	54465	85354
Rate of Change		3.025397	-26.2271	56.71348
PRIVATE	204424	205908	195385	ERR
- Lower Secondary	61914	58015	62249	58112
Rate of Change		-6.29744	7.298112	-6.64588
- Upper Secondary	14275	12763	13482	12811
Rate of Change		-10.5919	5.633471	-4.97700
- Vocational Schools	128235	135130	119654	-
Rate of Change		5.376847	-11.4526	ERR
Proportion between Public:Private	41.12430	39.80483	39.42432	ERR
- Lower Secondary	30.26528	28.20657	27.86586	25.74984
- Upper Secondary	15.41210	12.43266	13.74480	13.24490
- Vocational Schools	64.15117	64.66849	68.71966	ERR

Table 6.18

Institution	Tuition, Fees, Materials **		Opportunity Cost	
	Adjusted	Unadjusted	Adjusted	Unadjusted
Public Universities				
Khonkaen	2,355	2,639	16,711	13,537
Chiengmai	2,936	3,087	15,692	13,662
Songkla	2,947	2,559	17,043	13,566
Kasetsart	2,949	2,766	20,406	15,966
Chulalongkorn	4,049	4,039	19,207	16,538
Thammasat	2,337	2,455	17,670	15,838
Mahidol	3,126	3,429	18,487	15,387
Prasarnmitr	2,928	2,535	17,379	14,825
Silpakorn	4,534	4,275	23,153	14,947
King Mongkut (KMIT)	6,948	6,103	23,153	16,591
C.V.	37.5	32.2	10.9	7.5
Private College				
Krirk	17,801	8,614	28,176	13,545
Payap	11,360	10,341	14,216	12,210
Saengtham	420	6,552	21,645	15,561
College of Commerce	15,966	7,414	31,260	14,471
Bangkok	14,159	7,856	27,081	14,928
Siam Technical	9,929	8,207	17,262	14,270
College of Business	19,746	9,298	29,562	13,836
ABAC	22,849	11,334	34,102	16,761
C.V.	46.3	16.9	25.8	8.8

** The adjusted costs of tuition, fees and materials are estimated by subtracting scholarships from unadjusted costs, then weighting the differences with dropout and repetition rates.

Source: Nongram Setapanich, " Summary Report; Costs and Expenditures of Public Universities and Colleges " ; Bangkok: NEC, mimio, 1985, Table 3, p. 9.

Table 6.19

Municipal Sample of Secondary Schools : Regression Analysis

of Per Student Recurrent Expenditures

MODEL COMMAND: CRMODEL;LHS=PR83;RHS=ONE,PUBLIC,SHAST,PD83,PFEE83,MEANAG,MEANIN,MEANED$

Ordinary Least Squares Estimates

Dependent Variable.....	PR83
Number of Observations.....	238.
Mean of Dependent Variable..	643.13866
Std. Dev. of Dep. Variable..	2161.86467
Std. Error of Regression....	191.92244
Sum of Squared Residuals....	.84719E+07
R - Squared.....	.99235
Adjusted R - Squared.....	.99212
F-Statistic (7, 230).....	4263.05920
Significance of F-Test.....	.00000
Log-Likelihood.....	-1584.9
Restricted (Slopes=0) Log-L.	-2164.7
Chi-Squared (7).....	1159.7
Significance Level.....	.32173E-13
Durbin - Watson Statistic.....	.41983
Estimated Autocorrelation (Rho).....	.79009

Variable	Coefficient	Std. Error	T-ratio (Sig.Lvl)	Mean of X	Std.Dev.of X
ONE	-2016.22	512.3	-3.935 (.00017)	1.0000	.00000
PUBLIC	11.6015	67.81	.171 (.84051)	.83193	.37471
SHAST	.327429E-01	.3610E-01	.907 (.36874)	257.61	550.45
PD83	-37.9553	1.518	-25.009 (.00000)	2.6891	11.409
PFEE83	6.98453	.4924E-01	141.858 (.00000)	100.60	345.97
MEANAG	1.37084	.6282	2.182 (.02847)	337.76	25.832
MEANIN	2.64748	.9202	2.877 (.00448)	347.10	16.876
MEANED	2.36609	1.421	1.665 (.09323)	278.40	22.632
Sigma	191.922	8.797	21.817 (.00000)		

Table 6.20

Bangkok Sample of Secondary Schools : Regression Analysis

of Per Student Recurrent Expenditures

MODEL COMMAND: CRMODEL;LHS=PR83;RHS=ONE,GENDER,PUBLIC,SHIFT,SHAST,MEANED$

Ordinary Least Squares Estimates

Dependent Variable.....	PR83
Number of Observations.....	237.
Mean of Dependent Variable..	81.17300
Std. Dev. of Dep. Variable..	90.74209
Std. Error of Regression....	14.34889
Sum of Squared Residuals....	47561.
R - Squared.....	.97553
Adjusted R - Squared.....	.97500
F-Statistic (5, 231).....	1841.45601
Significance of F-Test.....	.00000
Log-Likelihood.....	-964.58
Restricted (Slopes=0) Log-L.	-1404.2
Chi-Squared (5).....	879.22
Significance Level.....	.32173E-13
Durbin - Watson Statistic.....	.37794
Estimated Autocorrelation (Rho).....	.81103

Variable	Coefficient	Std. Error	T-ratio (Sig.Lvl)	Mean of X	Std.Dev.of X
ONE	224.540	184.3	1.218 (.22197)	1.0000	.00000
GENDER	56.1125	6.600	8.502 (.00000)	.63713	.48185
PUBLIC	144.969	6.256	23.171 (.00000)	.97468	.15742
SHIFT	-114.586	2.664	-43.006 (.00000)	1.4641	.49977
SHAST	-.858812	.2470E-01	-34.769 (.00000)	98.840	93.945
MEANED	-.230147	.6294	-.366 (.71427)	294.43	4.9780
Sigma	14.3489	.6591	21.772 (.00000)		

Table 6.21

Bangkok Sample of Secondary Schools : Regression

Analysis of Grade Point Averages

```
MODEL COMMAND: CRMODEL;LHS=GPA;RHS=ONE,AGE,EDDAD,SHIFT,MEANAG,MEANED$

    Ordinary    Least Squares Estimates

    Dependent Variable.....      GPA
    Number of Observations.....          237.
    Mean of Dependent Variable..       4.54852
    Std. Dev. of Dep. Variable..       1.27008
    Std. Error of Regression....       1.18354
    Sum of Squared Residuals....     323.58
    R - Squared.................        .15002
    Adjusted R - Squared........        .13162
    F-Statistic (  5,  231).....       8.15435
    Significance of F-Test......        .00000
    Log-Likelihood..............    -373.23
    Restricted (Slopes=0) Log-L.    -392.45
    Chi-Squared ( 5)............     38.448
    Significance Level..........     .39984E-08
    Durbin - Watson Statistic.....      1.2710
    Estimated Autocorrelation (Rho).....     .36450
```

Variable	Coefficient	Std. Error	T-ratio (Sig.Lvl)	Mean of X	Std.Dev.of
ONE	-39.6173	15.36	-2.580 (.01021)	1.0000	.00000
AGE	-.185322	.4911E-01	-3.773 (.00029)	16.350	1.6286
EDDAD	.461917E-01	.5378E-01	.859 (.39570)	2.7215	1.5806
SHIFT	1.14545	.4404	2.601 (.00964)	1.4641	.49977
MEANAG	.402114E-01	.1127E-01	3.569 (.00056)	350.16	21.962
MEANED	.106349	.3807E-01	2.794 (.00566)	294.43	4.9780
Sigma	1.18354	.5436E-01	21.772 (.00000)		

Table 6.22

Municipal Sample of Secondary Schools : Regression

Analysis of Grade Point Averages

MODEL COMMAND: CRMODEL;LHS=GPA;RHS=ONE,AGE,GENDER,EDMOM,OCDAD,RPEATP,SHAST, MEANAG,MEANIN,MEANED$

Ordinary Least Squares Estimates

Dependent Variable.....	GPA
Number of Observations.....	238.
Mean of Dependent Variable..	4.45378
Std. Dev. of Dep. Variable..	1.25115
Std. Error of Regression....	1.13586
Sum of Squared Residuals....	294.16
R - Squared.....	.20709
Adjusted R - Squared.....	.17579
F-Statistic (9, 228).....	6.61650
Significance of F-Test.....	.00000
Log-Likelihood.....	-363.03
Restricted (Slopes=0) Log-L.	-390.53
Chi-Squared (9).....	55.013
Significance Level.....	.97317E-10
Durbin - Watson Statistic.....	2.0089
Estimated Autocorrelation (Rho).....	-.44541E-02

Variable	Coefficient	Std. Error	T-ratio (Sig.Lvl)	Mean of X	Std.Dev.of X
ONE	3.52244	3.029	1.163 (.24457)	1.0000	.00000
AGE	-.155656	.4554E-01	-3.418 (.00089)	16.361	1.7173
GENDER	-.351403	.1548	-2.271 (.02285)	.48319	.50077
EDMOM	.189238	.6550E-01	2.889 (.00433)	2.4202	1.1942
OCDAD	-.342623	.2220	-1.543 (.11988)	.13445	.34186
RPEATP	-.202214	.3870	-.522 (.60829)	.42017E-01	.20105
SHAST	-.131300E-03	.2065E-03	-.636 (.53296)	257.61	550.45
MEANAG	.891585E-02	.3619E-02	2.463 (.01392)	337.76	25.832
MEANIN	-.138045E-02	.5409E-02	-.255 (.78728)	347.10	16.876
MEANED	.267962E-02	.5714E-02	.469 (.64445)	278.40	22.632
Sigma	1.13586	.5206E-01	21.817 (.00000)		

Table 6.23

Municipal Sample of Secondary Schools; LOGIT

Analysis of Private School Choice

```
MODEL COMMAND: LOGIT; LHS=PRIVATE;RHS=ONE,GENDER,SBLING,EDMOM,OCDAD,STAY,RP
               EATP$

        2 OUTCOMES ARE:
        Y=00       Y=01


     COEFFICIENTS FOR OUTCOME Y=00      ARE NORMALIZED TO ZERO


                          ***** OUTCOME = Y=01

 Variable  Coefficient  Std. Error  T-ratio (Sig.Lvl)   Mean of X  Std.Dev.of X
 ---------------------------------------------------------------------------

ONE         .287095       .8959E-01    3.205 ( .00135)   1.0000       .00000
GENDER      .134754       .4502E-01    2.994 ( .00276)   .48319       .50077
SBLING    -.186909E-01    .9709E-02   -1.925 ( .05421)   4.7815       2.4569
EDMOM       .198225E-02   .1993E-01     .099 ( .92076)   2.4202       1.1942
OCDAD       .803063E-01   .7011E-01    1.145 ( .25205)   .13445       .34186
STAY      -.178220        .5284E-01   -3.373 ( .00074)   .70588       .45661
RPEATP      .367438       .1125        3.265 ( .00109)   .42017E-01   .20105

**************************************************************************

                        Method=NEWTON; Maximum iterations = 25
  Convergence criteria: Gradient  =  .1000000E-03
                        Function  =  .1000000E-05
                        Parameters=  .1000000E-04
  Starting values:    .2871      .1348      -.1869E-01   .1982E-02   .8031E-01
                     -.1782      .3674

Iteration  1     Function     174.0036
Param:    .287      .135      -.187E-01  .198E-02  .803E-01 -.178      .367
Gradnt   88.9       36.4       452.      213.       8.46      71.2      .451

Iteration  2     Function     94.24406
Param:   -.864      .532      -.745E-01  .706E-02  .318      -.703      1.50
Gradnt   13.2       3.38       76.0      30.1      .489       12.5     -.329E-01

Iteration  3     Function     88.47855
Param:   -.979      .979      -.145      .257E-01  .508      -1.12      1.78
Gradnt    2.91      .609       17.4      6.33      .133       2.70     -.214E-01

Iteration  4     Function     87.99059
Param:   -1.04      1.18      -.178      .404E-01  .585      -1.26      1.90
Gradnt    .309      .655E-01   1.83      .657      .180E-01   .269     -.265E-02

Iteration  5     Function     87.98451
Param:   -1.06      1.20      -.182      .429E-01  .596      -1.27      1.91
Gradnt    .442E-02  .931E-03   .257E-01  .927E-02  .279E-03   .365E-02 -.337E-04

Iteration  6     Function     87.98451
Param:   -1.06      1.20      -.182      .429E-01  .596      -1.27      1.91
Gradnt    .899E-06  .180E-06   .518E-05  .187E-05  .571E-07   .720E-06 -.579E-08
** Gradient has converged.
** B-vector has converged.

**************************************************************************

    Log-Likelihood.............    -87.985
    Restricted (Slopes=0) Log-L.   -107.77
    Chi-Squared ( 6).............   39.568
    Significance Level.........    .12114E-07

 Variable  Coefficient  Std. Error  T-ratio (Sig.Lvl)   Mean of X  Std.Dev.of X
 ---------------------------------------------------------------------------

ONE       -1.05738        .7560      -1.399 ( .16190)   1.0000       .00000
GENDER     1.20198        .4108       2.926 ( .00343)   .48319       .50077
SBLING    -.182056        .9468E-01  -1.923 ( .05451)   4.7815       2.4569
EDMOM      .428937E-01    .1650        .260 ( .79484)   2.4202       1.1942
OCDAD      .596214        .5141       1.160 ( .24618)   .13445       .34186
STAY      -1.27227        .4134      -3.078 ( .00208)   .70588       .45661
RPEATP     1.91240        .7479       2.557 ( .01056)   .42017E-01   .20105

Frequencies of actual vs. predicted outcomes
Predicted outcome has the highest probability.

                    Predicted

 Actual     TOTAL      0      1

 TOTAL        238    223     15

    0         198    189      9
    1          40     34      6
```

Table 6.24

Sources of Health Care Expenditures
(1983 Baht)

Year	Household and Other Private		MOPH		Other Government	
	million Baht	row percent	million Baht	row percent	million Baht	row percent
1979	19,408	66.5	6,010	20.6	3,765	12.9
1980	21,629	69.7	5,371	17.3	4,037	13.0
1981	23,334	68	6,136	17.9	4,849	14.1
1982	26,340	69.3	6,898	18.2	4,749	12.5
1983	28,768	68.9	7,902	18.9	5,099	12.2
Projections:						
1984	31,866	68.8	8,870	19.1	5,583	12.1
1985	35,298	68.7	9,956	19.4	6,114	11.9
1986	39,100	68.6	11,174	19.6	6,695	11.8
1987	43,311	68.5	12,543	19.9	731	11.6
1988	47,976	68.5	14,079	20.1	8,027	11.4
1989	53,143	68.4	15,803	20.3	8,790	11.3
1990	58,866	68.3	17,738	20.6	9,625	11.1
1991	65,206	68.2	19,910	20.8	10,539	11.0

Source: 1979-1983, from; NESDB National Income of Thailand, 1983.

Notes: Expenditure projections are computed by applying the weighted average annual growth rate for the years 1979 to 1983 as a constant growth rate for the years 1984 through 1991. The weights used were 0.1, 0.2, 0.3, and 0.4 for the years 1979-80, 1980-81, 1981-1982, and 1982-83 respectively.

Table 6.25

Visits to RTG Health Institution by year, 1982-1985

Province	F.Y. 1982							F.Y. 1983						
	Total		Provincial Hosp.		District Hosp.		Health Center	Total		Provincial Hosp.		District Hosp.		Health Center
	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.
Phichit	267,402	25,174	100,914	15,418	83,982	9,756	82,506	287,129	24,916	111,105	15,111	83,285	9,805	92,739
Phetchaboon	394,770	36,864	80,191	19,669	183,458	17,195	131,121	375,963	38,543	90,578	18,960	174,973	19,583	110,412
Nakhon Sawan	577,026	39,791	156,783	24,202	192,741	15,589	227,502	547,697	39,999	172,014	23,366	186,837	16,633	188,846
Phitsanuloke	412,517	55,982	165,272	43,222	117,760	12,760	129,485	430,199	55,366	182,787	42,799	137,982	12,567	109,430
Kamphaengphet	200,761	21,634	73,789	17,481	27,389	4,153	99,583	227,693	22,843	79,534	18,281	29,371	4,562	118,788
Lamphoon	207,879	17,311	60,321	12,663	62,295	4,648	85,263	218,014	18,397	56,086	13,932	78,267	4,465	83,661
Sukhothai	330,435	34,507	112,068	23,649	88,371	10,858	129,996	388,076	34,680	126,538	23,514	106,967	11,166	154,571
Buri Ram	651,792	64,863	120,118	34,196	232,299	30,667	299,375	618,997	63,715	129,372	30,786	250,362	32,929	239,263
Si Sa Ket	409,746	44,216	84,187	22,953	221,115	21,263	104,444	420,353	46,769	105,302	23,118	234,260	23,651	80,791
Surin	619,020	43,261	103,417	27,877	177,040	15,384	338,563	720,807	47,116	103,529	27,023	191,533	20,093	425,745
Maha Sarakham	445,174	31,136	91,378	15,819	146,071	15,317	207,725	478,576	37,125	125,377	19,123	166,375	18,002	186,824
Roi Et	609,129	64,339	141,565	39,570	153,703	24,769	313,861	531,991	103,031	100,195	76,573	188,202	26,458	243,594
Nong Khai	346,251	26,997	71,150	14,227	128,622	12,770	146,479	390,341	29,610	90,654	16,617	144,795	12,993	154,892
Udon Thani	909,277	60,805	141,796	30,523	254,554	30,282	512,927	944,613	64,682	165,024	30,820	305,560	33,862	474,029
Nakhon Pathom	443,202	36,288	145,536	28,620	116,060	7,668	181,606	461,235	39,371	149,569	29,263	123,808	10,108	187,858
Suphan Buri	365,966	42,379	127,120	28,283	126,589	14,096	112,257	390,420	45,731	137,845	30,538	128,884	15,193	123,691
Prachi Buri	307,152	46,116	79,804	17,948	151,331	28,168	76,017	378,265	52,819	76,403	18,709	200,943	34,110	100,919
Kanchana Buri	389,454	38,611	153,975	33,798	73,176	4,813	162,303	347,392	42,201	146,183	35,948	78,856	6,253	122,353
Songkhla	596,112	53,022	356,475	45,495	132,603	7,527	107,034	649,008	53,148	372,851	43,307	157,319	9,841	118,838
Nakhon Si Thammarat	712,214	46,825	205,856	24,419	256,486	22,406	249,872	744,752	54,209	303,745	27,549	253,579	26,660	187,428
Total	9,195,279	830,121	2,571,715	520,032	2,925,645	310,089	3,697,919	9,551,521	914,271	2,824,691	565,337	3,222,158	348,934	3,504,672
Percentage	100.00	100.00	27.97	62.65	31.82	37.35	40.22	100.00	100.00	29.57	61.83	33.73	38.17	36.69

Source : Unpublished MOPH Data.

Table 6.25 (continued)

Visits to RTG Health Institution by year, 1982-1985 (Percentage Share)

Province	F.Y. 1982							F.Y. 1983						
	Total		Provincial Hosp.		District Hosp.		Health Center	Total		Provincial Hosp.		District Hosp.		Health Center
	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.
Phichit	100.0	100.0	37.7	61.2	31.4	38.8	30.9	100.0	100.0	38.7	61.2	29.0	38.8	32.3
Phetchaboon	100.0	100.0	20.3	53.4	46.5	46.6	33.2	100.0	100.0	24.1	53.4	46.5	46.6	29.4
Nakhon Sawan	100.0	100.0	27.2	60.8	33.4	39.2	39.4	100.0	100.0	31.4	60.8	34.1	39.2	34.5
Phitsanuloke	100.0	100.0	40.1	77.2	28.5	22.8	31.4	100.0	100.0	42.5	77.2	32.1	22.8	25.4
Kamphaengphet	100.0	100.0	36.8	80.8	13.6	19.2	49.6	100.0	100.0	34.9	80.8	12.9	19.2	52.2
Lamphoon	100.0	100.0	29.0	73.2	30.0	26.8	41.0	100.0	100.0	25.7	73.2	35.9	26.8	38.4
Sukhothai	100.0	100.0	33.9	68.5	26.7	31.5	39.3	100.0	100.0	32.6	68.5	27.6	31.5	39.8
Buri Ram	100.0	100.0	18.4	52.7	35.6	47.3	45.9	100.0	100.0	20.9	52.7	40.4	47.3	38.7
Si Sa Ket	100.0	100.0	20.5	51.9	54.0	48.1	25.5	100.0	100.0	25.1	51.9	55.7	48.1	19.2
Surin	100.0	100.0	16.7	64.4	28.6	35.6	54.7	100.0	100.0	14.4	64.4	26.6	35.6	59.1
Maha Sarakham	100.0	100.0	20.5	50.8	32.8	49.2	46.7	100.0	100.0	26.2	50.8	34.8	49.2	39.0
Roi Et	100.0	100.0	23.2	61.5	25.2	38.5	51.5	100.0	100.0	18.8	61.5	35.4	38.5	45.8
Nong Khai	100.0	100.0	20.5	52.7	37.1	47.3	42.3	100.0	100.0	23.2	52.7	37.1	47.3	39.7
Udon Thani	100.0	100.0	15.6	50.2	28.0	49.8	56.4	100.0	100.0	17.5	50.2	32.3	49.8	50.2
Nakhon Pathom	100.0	100.0	32.8	78.9	26.2	21.1	41.0	100.0	100.0	32.4	78.9	26.8	21.1	40.7
Suphan Buri	100.0	100.0	34.7	66.7	34.6	33.3	30.7	100.0	100.0	35.3	66.7	33.0	33.3	31.7
Prachi Buri	100.0	100.0	26.0	38.9	49.3	61.1	24.7	100.0	100.0	20.2	38.9	53.1	61.1	26.7
Kanchana Buri	100.0	100.0	39.5	87.5	18.8	12.5	41.7	100.0	100.0	42.1	87.5	22.7	12.5	35.2
Songkhla	100.0	100.0	59.8	85.8	22.2	14.2	18.0	100.0	100.0	57.4	85.8	24.2	14.2	18.3
Nakhon Si Thammarat	100.0	100.0	28.9	52.1	36.0	47.9	35.1	100.0	100.0	40.8	52.1	34.0	47.9	25.2
Total	100.0	100.0	28.0	62.6	31.8	37.4	40.2	100.0	100.0	29.6	61.8	33.7	38.2	36.7

Table 6.25 (continued)

Province	F.Y. 1984							F.Y. 1985						
	Total		Provincial Hosp.		District Hosp.		Health Center	Total		Provincial Hosp.		District Hosp.		Health Center
	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.
Phichit	100.0	100.0	34.8	59.0	27.6	41.0	37.6	100.0	100.0	33.2	58.4	26.5	41.6	40.3
Phetchaboon	100.0	100.0	21.5	43.3	47.5	56.7	31.0	100.0	100.0	21.4	43.4	45.5	56.6	33.1
Nakhon Sawan	100.0	100.0	33.4	57.0	40.7	43.0	25.9	100.0	100.0	32.7	55.8	43.1	44.2	24.2
Phitsanuloke	100.0	100.0	45.7	72.2	33.4	27.8	20.9	100.0	100.0	41.6	69.6	34.1	30.4	24.3
Kamphaengphet	100.0	100.0	29.0	73.4	16.8	26.6	54.3	100.0	100.0	28.4	68.8	17.6	31.2	53.9
Lamphoon	100.0	100.0	25.9	66.2	34.5	33.8	39.6	100.0	100.0	30.0	66.6	32.7	33.4	37.3
Sukhothai	100.0	100.0	31.1	70.2	25.9	29.8	43.0	100.0	100.0	34.6	67.5	25.8	32.5	39.6
Buri Ram	100.0	100.0	17.5	47.1	37.8	52.9	44.7	100.0	100.0	16.3	43.4	37.9	56.6	45.8
Si Sa Ket	100.0	100.0	25.0	43.5	58.6	56.5	16.5	100.0	100.0	17.3	37.9	44.5	62.1	38.2
Surin	100.0	100.0	21.9	52.4	48.1	47.6	30.0	100.0	100.0	18.5	49.7	40.1	50.3	41.4
Maha Sarakham	100.0	100.0	30.1	49.5	45.5	50.5	24.4	100.0	100.0	22.1	41.4	46.2	58.6	31.8
Roi Et	100.0	100.0	19.1	71.9	45.4	28.1	35.5	100.0	100.0	17.9	46.5	42.5	53.5	39.5
Nong Khai	100.0	100.0	23.5	56.8	38.4	43.2	38.0	100.0	100.0	24.6	53.7	38.4	46.3	37.0
Udon Thani	100.0	100.0	19.2	43.2	33.0	56.8	47.7	100.0	100.0	18.4	40.1	38.2	59.9	43.4
Nakhon Pathom	100.0	100.0	32.0	75.0	23.5	25.0	44.5	100.0	100.0	32.4	73.9	26.0	26.1	41.6
Suphan Buri	100.0	100.0	33.4	63.0	38.2	37.0	28.4	100.0	100.0	31.6	56.9	40.4	43.1	28.0
Prachi Buri	100.0	100.0	19.1	34.5	56.7	65.5	24.2	100.0	100.0	17.1	34.6	57.9	65.4	25.0
Kanchana Buri	100.0	100.0	39.2	81.4	23.0	18.6	37.8	100.0	100.0	42.9	80.2	22.3	19.8	34.8
Songkhla	100.0	100.0	56.1	77.4	28.0	22.6	15.9	100.0	100.0	55.4	76.6	28.6	23.4	16.0
Nakhon Si Thammarat	100.0	100.0	46.9	50.1	37.7	49.9	15.3	100.0	100.0	38.4	48.3	43.4	51.7	18.3
Total	100.0	100.0	30.2	58.7	37.1	41.3	32.6	100.0	100.0	28.0	53.7	37.6	46.3	34.4

Table 6.25 (continued)

Province	F.Y. 1984							F.Y. 1985						
	Total		Provincial Hosp.		District Hosp.		Health Center	Total		Provincial Hosp.		District Hosp.		Health Center
	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.	in-pat.	out-pat.
Phichit	345,211	29,228	120,184	17,231	95,219	11,997	129,808	380,418	29,269	126,243	17,091	100,918	12,178	153,257
Phetchaboon	460,488	48,603	98,820	21,062	218,775	27,541	142,893	474,954	49,788	101,712	21,623	215,978	28,165	157,264
Nakhon Sawan	530,854	51,401	177,455	29,306	216,008	22,095	137,391	563,312	50,285	184,060	28,046	242,769	22,239	136,483
Phitsanuloke	488,849	52,348	223,422	37,780	163,422	14,568	102,005	564,523	56,414	234,883	39,240	192,442	17,174	137,198
Kamphaengphet	325,997	24,684	94,427	18,128	54,676	6,556	176,894	338,836	27,333	96,333	18,801	59,773	8,532	182,730
Lamphoon	218,916	20,111	56,629	13,321	75,599	6,790	86,688	263,656	26,133	79,080	17,407	86,204	8,726	98,372
Sukhothai	451,140	36,882	140,416	25,897	116,758	10,985	193,966	456,142	39,183	157,976	26,454	117,479	12,729	180,687
Buri Ram	728,068	67,870	127,156	31,945	275,216	35,925	325,696	824,096	78,284	134,228	33,990	312,473	44,294	377,395
Si Sa Ket	418,633	49,081	104,538	21,362	245,160	27,719	68,935	685,564	55,120	118,628	20,873	305,092	34,247	261,844
Surin	527,177	50,373	115,521	26,413	253,420	23,960	158,236	745,139	57,864	137,775	28,749	298,886	29,115	308,478
Maha Sarakham	440,970	43,060	132,596	21,329	200,772	21,731	107,602	512,104	39,919	112,974	16,523	236,456	23,396	162,674
Roi Et	565,263	114,249	107,938	82,156	256,400	32,093	200,925	737,658	73,112	132,313	33,979	313,708	39,133	291,637
Nong Khai	420,335	32,767	98,953	18,596	161,616	14,171	159,766	421,649	35,880	103,828	19,283	161,780	16,597	156,041
Udon Thani	1,064,040	77,432	204,609	33,481	351,576	43,951	507,855	1,126,858	86,239	207,562	34,593	430,448	51,646	488,848
Nakhon Pathom	484,018	38,548	154,766	28,912	113,780	9,636	215,472	502,831	40,330	163,023	29,793	130,826	10,537	208,982
Suphan Buri	428,272	50,586	143,010	31,846	163,808	18,740	121,454	471,634	52,606	149,152	29,958	190,534	22,648	131,948
Prachi Buri	388,511	52,667	74,245	18,153	220,126	34,514	94,140	451,734	55,185	77,302	19,088	261,348	36,097	113,084
Kanchana Buri	333,849	44,694	130,940	36,390	76,701	8,304	126,208	390,715	48,545	167,631	38,936	87,004	9,609	136,080
Songkhla	689,794	56,874	386,862	44,028	193,332	12,846	109,600	768,322	59,848	425,381	45,830	219,675	14,018	123,266
Nakhon Si Thammarat	729,271	60,095	342,088	30,130	275,262	29,965	111,921	813,401	77,349	311,989	37,388	352,890	39,961	148,522
Total	10,039,656	1,001,553	3,034,575	587,466	3,727,626	414,087	3,277,455	11,493,546	1,038,686	3,222,073	557,645	4,316,683	481,041	3,954,790
Percentage	100.00	100.00	30.23	58.66	37.13	41.34	32.65	100.00	100.00	28.03	53.69	37.56	46.31	34.41

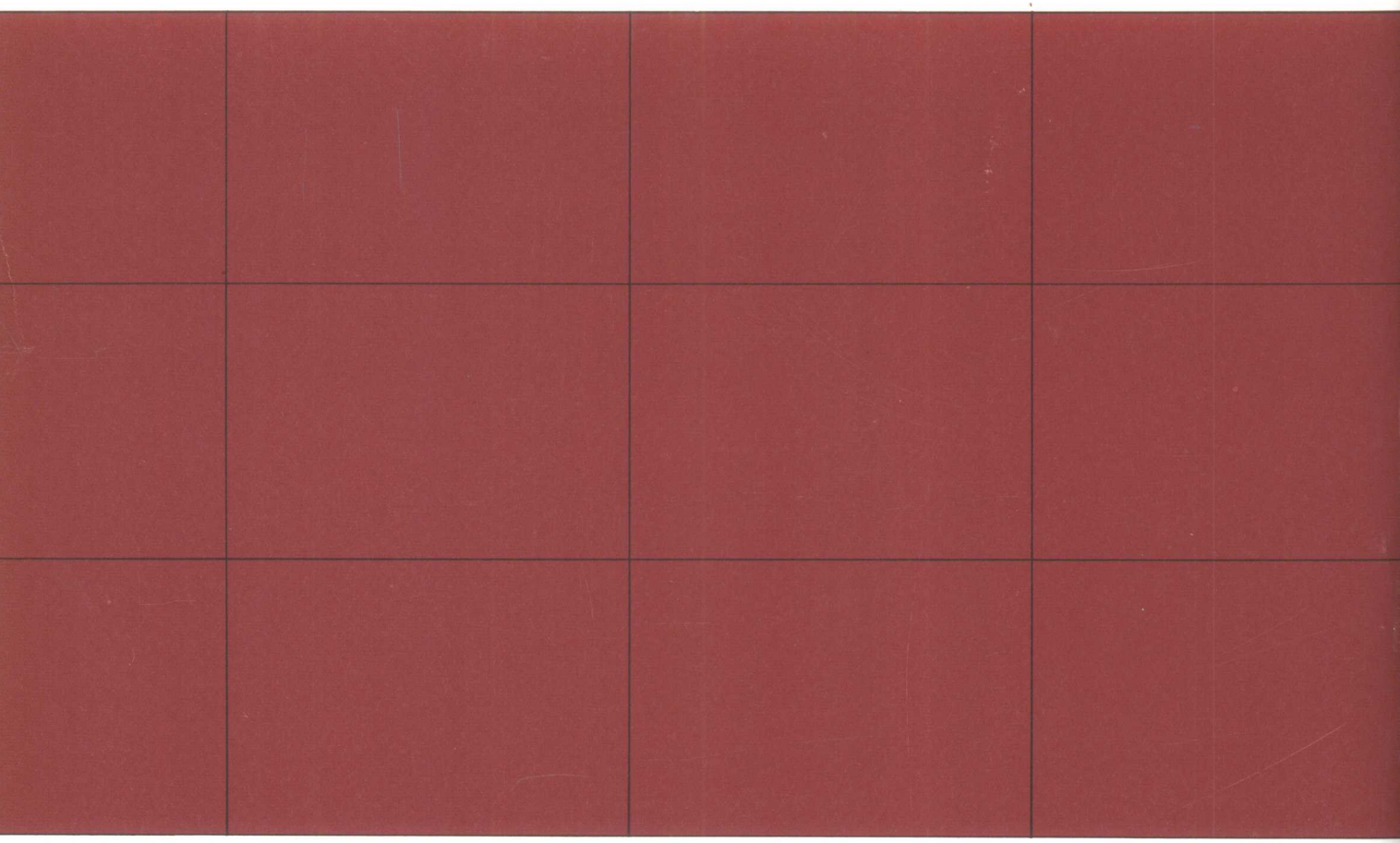
Table 6.26

EDUCATION BUDGET BY LEVEL (MILLION BAHT)

YEAR / LEVEL	1984 BAHT	1984 %	1985 BAHT	1985 %	1986 BAHT	1986 %
ADMINISTRATION	675.0	1.8	671.2	1.7	674.6	1.7
% CHANGE			-0.6		0.5	
PRIMARY	21734.2	57.7	22671.5	57.7	22790.9	58.4
% CHANGE			4.1		0.5	
SECONDARY	7143.8	19.0	7503.0	19.1	7598.3	19.5
% CHANGE			4.8		1.3	
TETIARY	4530.2	12.0	4637.5	11.8	4336.3	11.1
% CHANGE			2.3		-6.9	
VOCATION	3601.1	9.6	3809.8	9.7	3613.8	9.3
% CHANGE			5.5		-5.4	
TOTAL	37684.3	100.0	39293.0	100.0	39013.9	100.0
% CHANGE			4.1		-0.7	

GOVERNMENT EXPENDITURE PER STUDENT AT SECONDARY LEVEL

YEAR	1981 ADMIN	1981 CONSTR	1982 ADMIN	1982 CONSTR	1983 ADMIN	1983 CONSTR	1984 ADMIN	1984 CONSTR
SECONDARY	2405	1077	2463	1330	2844	1156	2852	1049
% CHANGE			2.35	19.02	13.40	-15.05	0.28	-10.20



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