CHAPTER 4

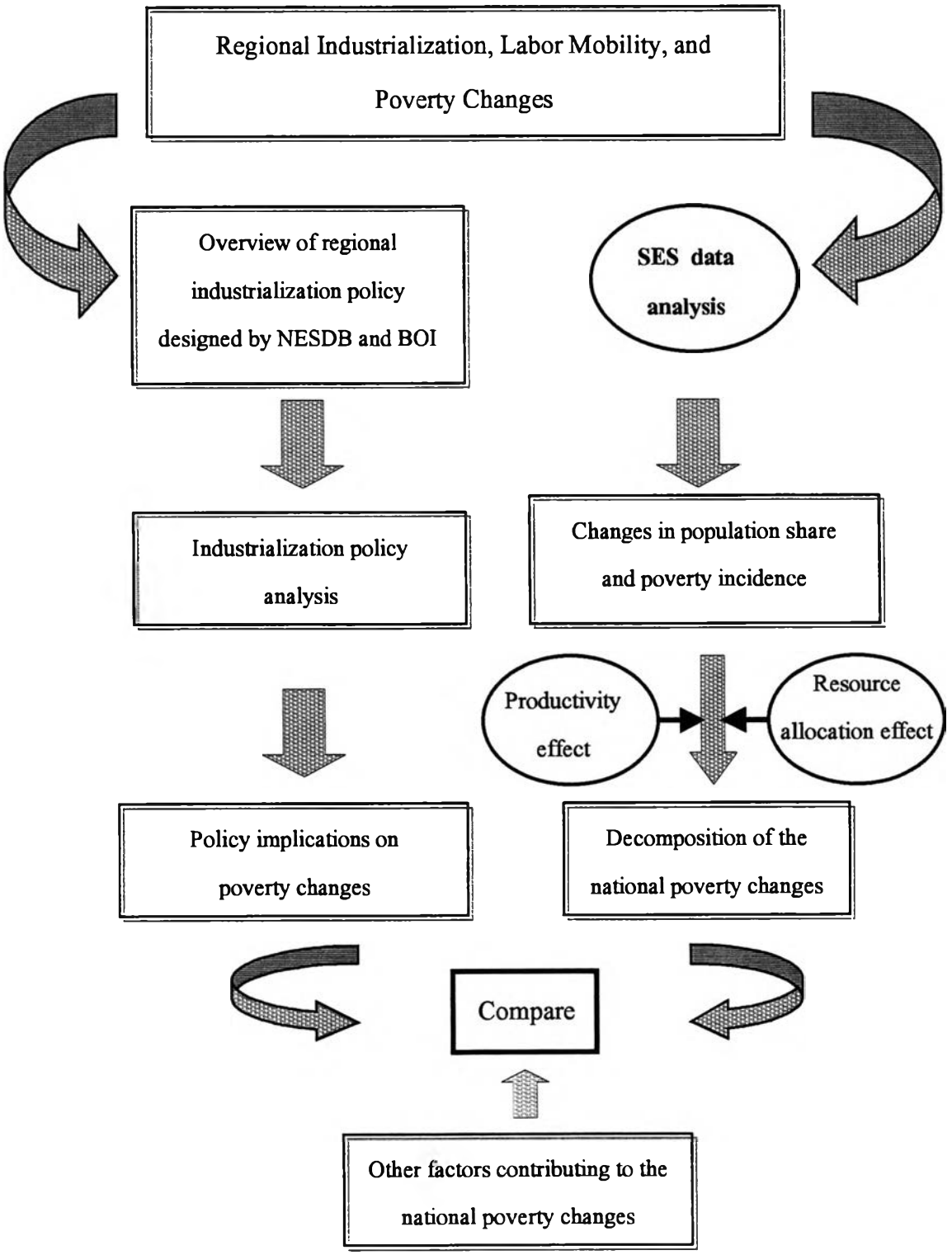
METHODOLOGY

From the previous chapter we can see the poverty tendency in Thailand and some perspectives on regional industry development and labor mobility. This chapter will construct the way to find out the impact of regional industrialization on poverty incidence via the labor mobility and the income changes over a number of years in accordance with the data from 1988, 1996, and 2000. The areas of the study will be classified into three; Bangkok Metropolitan Region (BMR), Eastern Seaboard Area (ESB), and the other areas. Socio-economic Survey Data from 1988, 1996, and 2000 will be used for the estimation of labor mobility and the poverty incidence changes.

The methodology used in this study aims to investigate the government industrialization policies compared to the change in the incidence of national poverty. The productivity effect and the resource allocation effect are the two important factors used to explain how regional industrialization affect the national poverty changes. The meaning of the two effects will be explained in section 4.1.

The methodology will be as follows:

Figure 4.1 Methodology



4.1 Empirical Model

The equation for investigating the national poverty incidence will be applied from the empirical model in Samtisart (2000) which attempted to disaggregate the changes in poverty incidence by using a decomposition analysis. The model for this study is

$$dHCR = \sum_i \sum_j (\bar{P}_{ij} \cdot dHCR_{ij}) + \sum_i \sum_j (\overline{HCR}_{ij} \cdot dP_{ij})$$

where:

$\sum_i \sum_j (\bar{P}_{ij} \cdot dHCR_{ij})$ = total productivity effect

$\sum_i \sum_j (\overline{HCR}_{ij} \cdot dP_{ij})$ = total resource allocation effect

and $dHCR$ = changes in national poverty incidence

$\bar{P}_{ij}$ = average population share of sector j in region i between 1988 and 1996, and between 1996 and 2000

$\overline{HCR}_{ij}$ = average poverty incidence of sector j in region i between 1988 and 1996, and between 1996 and 2000

$dHCR_{ij}$ = changes in HCR of sector j in region i

dP_{ij} = changes in population share of sector j in region i

i = BMR, ESB, and other regions

j = agriculture sector, manufacturing sector, services sector, and other sectors

The productivity effect resulting from the labor income changes in relation to changes in prices. The income change has a direct effect on regional and sectoral poverty incidence changes. The productivity effect explains how the changes in poverty within each region and sector contributes to the changes in national poverty incidence, while the share of population in each region and sector is assumed to be constant. The subgroup poverty changes reflect productivity changes via changes in income and employment.

The resource allocation effect explains how population mobility contributes to the changes in national poverty incidence, by assuming that there was no changes in poverty within each region and sector. Given the constant level of the national poverty incidence, the inter-group population mobility and the unbalance mobility between the poor and the non-poor across regions and sectors can contribute to the changes in subgroup poverty incidence.

It should be noted that the size of the contribution of the two effects to the national poverty depends not only on the size of changes in subgroup population share and changes in poverty incidence, but also the size of the average level of subgroup poverty incidence and population share. For example, a change in subgroup poverty at a higher average level of subgroup population share could lead to a greater size of the productivity effect than an equal change in subgroup poverty at a lower average level of subgroup population share. On the other hand, a change in subgroup population share at a higher average level of subgroup poverty incidence could lead to a greater size of the resource allocation effect than an equal change in subgroup population share at a lower average level of subgroup poverty incidence.

In matrix form, both effects can be illustrated as follow;

Region

Sector	BMR	ESB	Others
Agriculture	$\bar{P}_{BA} \cdot dHCR_{BA}$	$\bar{P}_{EA} \cdot dHCR_{EA}$	$\bar{P}_{OA} \cdot dHCR_{OA}$
Manufacturing	$\bar{P}_{BM} \cdot dHCR_{BM}$	$\bar{P}_{EM} \cdot dHCR_{EM}$	$\bar{P}_{OM} \cdot dHCR_{OM}$
Services	$\bar{P}_{BS} \cdot dHCR_{BS}$	$\bar{P}_{ES} \cdot dHCR_{ES}$	$\bar{P}_{OS} \cdot dHCR_{OS}$
Others	$\bar{P}_{BO} \cdot dHCR_{BO}$	$\bar{P}_{EO} \cdot dHCR_{EO}$	$\bar{P}_{OO} \cdot dHCR_{OO}$

$$\text{Total productivity effect} = \sum_i \sum_j (\bar{P}_{ij} \cdot dHCR_{ij})$$

and

Region

Sector	BMR	ESB	Others
Agriculture	$\overline{HCR}_{BA} \cdot dP_{BA}$	$\overline{HCR}_{EA} \cdot dP_{EA}$	$\overline{HCR}_{OA} \cdot dP_{OA}$
Manufacturing	$\overline{HCR}_{BM} \cdot dP_{BM}$	$\overline{HCR}_{EM} \cdot dP_{EM}$	$\overline{HCR}_{OM} \cdot dP_{OM}$
Services	$\overline{HCR}_{BS} \cdot dP_{BS}$	$\overline{HCR}_{ES} \cdot dP_{ES}$	$\overline{HCR}_{OS} \cdot dP_{OS}$
Others	$\overline{HCR}_{BO} \cdot dP_{BO}$	$\overline{HCR}_{EO} \cdot dP_{EO}$	$\overline{HCR}_{OO} \cdot dP_{OO}$

$$\text{Total resource allocation effect} = \sum_i \sum_j (\overline{HCR}_{ij} \cdot dP_{ij})$$

4.2 Variables Explanation

To estimate the productivity and resource allocation effect, we need to explain the extent to which variables are used in the estimated model. These are population share (P) and poverty incidence (HCR).

4.2.1 Population share (P)

This study will measure labor mobility in terms of changes in regional and sectoral population share. Population share means the population of a reference group expressed as a proportion of the total population of the group. A change in the population share of each group will be explained in mathematical terms as follows:

		Region		
		BMR	ESB	Others
Sector	Agriculture	dP_{BA}	dP_{EA}	dP_{OA}
	Manufacturing	dP_{BM}	dP_{EM}	dP_{OM}
	Services	dP_{BS}	dP_{ES}	dP_{OS}
	Others	dP_{BO}	dP_{EO}	dP_{OO}

In summation, total changes in the population share equals zero or;

$$\sum dP_{ij} = 0$$

If $dP_{ij} > 0$ means net in-mobility

$dP_{ij} < 0$ means net out-mobility

where

i = BMR (B), ESB (E), and others (O)

j = agriculture (A), manufacturing (M), services (S), and others (O)

This study assumes that there was no effect from natural growth rate on the population share changes. This is supported by the actual rate over the periods of the study (table 4.1). The rate of natural growth in BMR and ESB are higher than the rate in the other regions. It was induced by the higher birth rates in BMR and ESB than that was in the other regions. This might be influenced by a high degree of industrialization in BMR and ESB which stimulated an outflows of young workers from the other regions into BMR and ESB in order to seek a higher paid jobs. Young workers tend to have new families and have children.

However, data of natural growth rate in each sector of production was not available. Thus, this study assumes that the changes in regional and sectoral population share depend largely on the mobility of labor across regions and sectors.

Table 4.1 Natural Growth Rate of Population by Region

Population at 1988 (person)		1989-1996				Annual average of natural growth rate (%)
		Birth (person)	Death (person)	Birth rate (%)	Death rate (%)	
Whole Kingdom	54,960,917	7,783,320	2,184,650	14.2	4.0	1.3
BMR	8,509,386	1,436,792	249,747	16.9	2.9	1.7
ESB	1,906,873	297,378	73,932	15.6	3.9	1.5
Others	44,544,658	6,049,150	1,860,971	13.6	4.2	1.2
Population at 1996 (person)		1997-2000				Annual average of natural growth rate (%)
		Birth (person)	Death (person)	Birth rate (%)	Death rate (%)	
Whole Kingdom	60,116,182	3,302,655	1,262,696	5.5	2.1	0.9
BMR	9,009,004	631,121	157,921	7.0	1.8	1.3
ESB	2,121,053	146,393	45,305	6.9	2.1	1.2
Others	48,986,125	2,525,141	1,059,470	5.2	2.2	0.8

Source: Calculated from the figures complied by the Statistical Data Bank and Information Dissemination Division, National Statistical Office.

4.2.2 Poverty incidence (HCR)

This study does a decomposition analysis of poverty by employing the Head-Count Ratio (HCR) as a poverty index. Based on Sen (1976), the absolute index of poverty (HCR) will be

$$HCR = \frac{N^P}{N}$$

where:

HCR = Head-Count Ratio

N = the total population

N^P = the number of poor people with income below the poverty lines

The poverty line has been set as an absolute standard of income to classify population in to "poor" and "non-poor". The line is defined in absolute terms so that the same standard is used for all regions and in all years. The only adjustment is taking into account the price changes. The adjusted urban and rural poverty lines in this study are as follows;

Year	Poverty lines (baht/person/year)	
	Urban	Rural
1988	6,228	4,166
1996	9,300	6,222
2000	10,816	7,235