DYNAMICS OF POVERTY, INEQUALITY AND THAI GOVERNMENT PROVINCIAL BUDGET ALLOCATION

Areeporn Asawinpongphan

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Areeporn Asawinpongphan

School of Development Economics

Professor ..... Major Advisor

(Direk Patmasiriwat, Ph.D.)

Professor ..... Co-Advisor

(Nattapong Thongpakde, Ph.D)

Assistant Professor ..... Co-Advisor

(Amornrat Apinunmahakul, Ph.D.)

The Examining Committee Approved This Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy (Economics).

..... Committee Chairperson

(Somchai Jitsuchon, Ph.D.)

Professor ..... Committee

(Nattapong Thongpakde, Ph.D.)

Assistant Professor ..... Committee

(Amornrat Apinunmahakul, Ph.D.)

Professor ..... Committee

(Direk Patmasiriwat, Ph.D.)

Assistant Professor ..... Dean

(Nada Chunsom, D.B.A.)

April, 2015

ABSTRACT

Title of Dissertation	Dynamics of Poverty, Inequality and Thai Government Provincial Budget Allocation
Author	Miss Areeporn Asawinpongphan
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This dissertation examines the impact of government budget allocation (all in per capita unit) to inequality and poverty by single household level covered in 75 provinces. The study is based on in-depth analysis the dynamic of government expenditures and other factors such as inflation, gross provincial product (GPP) and unemployment to the two main welfare indicators (inequality and poverty). The study applied panel data analysis in provincial level. The study result shows that government budget allocations per capita from each ministry can alleviate the inequality in some extent; likewise can also reduce the poverty rate. Also if consider on other factors, higher inflation in Thailand leads to a higher inequality. In addition, this study is exploring the analysis on the special program that invested in each specific province whether it is able to alleviate the inequality and poverty or not. The results show some specific program is worthwhile to invest but some is in doubt

However, as changes in inequality and poverty are not purely the effect of these special programmes, then cannot conclude that some of the selective programmes are not effective tools. This might be because other factors had a big negative influence in those particular provinces, so these programs alone could not improve income distribution and lower poverty rates. Even if inequality and poverty was improved, still cannot conclude that this was purely from these special programme; other factors might support this outcome. According to this, this study can be a guidance for Thai government should study more in a depth detail which

kind and which source of government expenditure should be focused more to invest as to relieve the inequality and poverty.

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The completion of my dissertation and subsequent Ph.D. course has been a long journey. Like other Ph.D. students, dissertation has always been a priority for us, but there are several priorities in a my life as working at the same time as the whole Ph.D. course e .As a result of due to life's challenges, my dissertation could not always be the number one priority. At any rate I am so grateful that it has been finished. I could not have succeeded without the invaluable support of a several professors, Professor Direk Patmasiriwat, Professor Nattapong Thongpakde and Assistant Professor Amornrat Apinunmahakul. Without these supporters, , I may not have gotten to where I am today.

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Areeporn Asawinpongphan
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ABBREVIATIONS

Abbreviations	Equivalence
ACF	Autocorrelation function
ARIMA	Autoregressive integrated moving average
ASEAN	Association of South-East Asian Nations
BLUE	Best Linear Unbiased Estimator
CPI	Consumer Price Index
CSR	Corporate Social Responsibility
FE	Fixed Effects
GDP	Gross Domestic Product
GIE	GINI Income Elasticity
GINI	Government Budget to Income Inequality
GPP	Gross Provincial Product
HIPP	Ministry of Public Health
HSES	Household Socio Economic survey
IMF	International Monetary Fund
MLD	Mean Log Deviation
OECD	Organisation for Economic Cooperation and Development
OLS	Ordinary Least Square
PPP	Purchasing Power Parity
SES	Socio-economic Status
SUF	Subsidio Unico Familia

CHAPTER 1

INTRODUCTION

1.1 Statement of the Problem

Recently, rising income inequality and poverty are a growing concern for policymakers; this is viewed by many policy makers as important on both moral and ethical grounds. High inequality can be a powerful obstacle to a development and a prosperity. Firstly, given average income levels, higher income inequality means higher poverty, this can result in development traps, which prevent the poor from contributing to growth due to financial market imperfections and institutional constraints. Secondly, higher inequality shows the negative effect of aggregate income growth on poverty: the more inequality in income distribution, the faster the growth rate required to meet a given reduction rate in poverty. Thus, inequality lies at the core of stagnation. Thirdly, high inequality can also be a reason for conflicts over distribution and social tension, which can undermine the stability of policies and institutions, this definitely discourages investment and growth.

What, then, are the factors driving inequality? These can include:

1) Globalisation, in which the wages of low skilled workers has shown a downward trend.

2) Technological change, which benefits high-skilled workers.

3) Increasing competition in product and factor markets, and a decreased bargaining power of labour, by institutional and regulatory reforms.

4) Increasing labour force; especially low skilled workers.

5) Poor governance of taxation systems and expenditure; loopholes for tax avoidance/evasion, government policies are not pro-poor.

Economics studies note that high economic growth does not always ensure improvements in income distribution and reductions in poverty. The process of growth somehow cannot avoid increasing inequality, at least in the early stages. This widening in income disparities has also heightened economic interest in the role of fiscal policy as a redistributive instrument in the short term, including appropriate tax rates and targeting programmes. For some developing countries, a low tax-to-GDP (gross domestic product) ratio reflects poor governance, weak tax administration and widespread tax evasion. Limiting the role of formal cash transfers and social protection policies will also lead to income inequality and poverty.

As a result, many policy makers view more equal income distribution and poverty reduction as a desirable goal, although the objectives may differ. Lower income inequality is often viewed as important for achieving increased equal opportunity to access economic, social and political resources. Some might view it as undesirable because existing income inequality is perceived as the outcome of unfair access to resources and thus detrimental to social integration. Some inequality is necessary for investment incentives and economic growth (Barro and Forbes, 2000). However, evidence also exists that high inequality may slow growth, especially if it affects credit market imperfections or political corruption and instability (Berg and Ostry, 2011).

Apart from these in developing countries, social spending on this expenditure side of the budget could be a primary redistributive tool. This has formed the basis for agreement between many researchers and policymakers on the relative roles of tax and expenditure policies in income redistribution and poverty reduction.

The question remains: how can public spending be distributed and transferred effectively? This question targets programmes on the community level. Many studies have noted that fiscal policy can influence income distribution, both directly by the effect on current disposable incomes, and indirectly by the effect on future earnings, which vary across economies. These are influenced by differences in available fiscal and the role of government. For this, spending priorities must be well defined. It is often desirable to target social transfers to those beneficiaries whose needs are most urgent such as the poor.

Using anti-poverty programmes to target the poor is now common. A central authority delegates the task of choosing programme beneficiaries to local organisations. Policymakers of decentralised targeting have claimed local people are able to access more information about who is poor and an appropriate target. Local institutions are more accountable to local people, and hence have an incentive to use locally available information to improve programme performance.

Reliable evidence exists to support the claim that more information is available locally Alderman, (2002). However, the claim that local institutions in developing countries are accountable to the poor is debated. Some researchers have mentioned that accountability is persuasive in settings in which there is little or no distributional conflict at the local level. For example, Seabright (1996) developed the accountability argument for decentralisation in the context of local homogeneous communities. However, this is often the case in developed countries only, where the cost of inter-jurisdictional mobility seems low.

As a result, sound economic and social policies help to either limit unfair income distribution or achieve its improvement, reducing poverty rates. The use of government instruments, such as government expenditure from each ministry is highly interesting. These governments' policy instruments might be able to help with income distribution and poverty reduction. If inequality is above tolerable levels, government should target the root causes of inequality, through strategies that aim to broaden opportunity; for example, by expanding access to education, health and employment. Also, policy should ensure that the fiscal system performs its redistributive function effectively to the poor. Moreover, policy targets should depend on provincial level.

Table 1.1 shows the total government spending in Thailand during year 2006-2011. There was an increasing trend in total spending except in 2009-2010 that Thailand was in economic recession period. One of the main purposes for government budget spending which has been mentioned in every budget year is to alleviate the poverty and increase equality.

Table 1.1 Total Government Spending in Thailand (unit 1000THB) (not Inclusive of Expenditure by Central Department)

Year	Total government spending in all provinces (unit 1000baht)
2006	225,000,000
2007	231,000,000
2008	273,000,000
2009	179,000,000
2010	158,000,000
2011	286,000,000
Total	1,350,000,000

From Thailand's budget bureau in 2008, Table 1.2 presents the structure of Thai government expenditure, classified by function.

Table 1.2 Thailand Government Expenditure 2008

Expenditure by Function	Actual Expenditure in Bhat (Millions)	Distribution of Expenditure (Percent)
General public services	105,817	10.2
Defense affairs and services	88,327	8.5
Public order and safety	52,281	5.1
Housing and community amenities	40,612	3.9
Health affairs and services	70,129	6.8
Education affairs and services	196,411	19.0
Social security and welfare	32,880	3.2
Recreation, culture, and religion	13,459	1.3
Agriculture, forestry, and fishery affairs	59,571	5.8
Fuel and energy	2,531	0.2
Mining, manufacturing, and construction	4,261	0.4
Transport and communication	135,803	13.1
Other economic services	232,964	22.5
Total government expenditure	1,035,046	100.0

Source: Son, 2006: 437.

Table above show the budget allocation from each ministry in Thailand, Education affairs and services, health affairs and services, social security, agriculture, defense affairs and transport comprise a high percentage of total government expenditure. A summary of statistics below shows each year's per capita budget allocation.

Table 1.3 reveals the government's large investment in education during 2006 to 2008. Investment in agriculture sector was high during 2008-2011, likewise in transportation.

In addition, from table 1.4, if focusing on the detail by region in 2006 to 2011, education budget per capita was allocated more to northern and southern regions, compared to other regions. Transportation and agriculture budget per capita were highly invested in the central and southern regions, respectively.

The point is made that different budget allocations in each year, each province and each region can effectively alleviate inequality and poverty, or not.

Table 1.3 Thailand Provincial Level per Capita Budget Allocation 2006-2011

year	educap	socialcap	healthcap	pmcap	agricap	transcap	comcap	intcap	indcap	localcap
2006	3314.1	47.3	1120.0	0.7	311.8	436.0	7.7	777.0	4.4	4347.5
2007	3792.6	51.2	1282.3	1.4	516.4	317.3	4.5	1043.6	4.6	4745.6
2008	4505.7	43.4	1417.6	1.0	523.0	358.6	10.9	601.3	8.8	5022.5
2009	2178.0	55.8	1486.4	1.8	494.4	623.8	8.0	502.4	6.9	5088.6
2010	3143.8	46.2	1621.0	2.5	261.3	578.1	7.0	568.5	6.1	5180.9
2011	4109.6	66.8	1721.9	2.1	550.6	986.7	7.1	634.6	8.7	5912.5
Total	3507.3	51.8	1441.5	1.6	442.9	550.1	7.5	687.9	6.6	5049.6

Summary statistics: mean; by categories of: year

Table 1.4 Thailand Regional Level per Capita Budget Allocation 2006–2011

Region	educap	socialcap	healthcap	pmcap	agricap	transcap	comcap	intcap	indcap	localcap
Central	3132.8	45.4	1302.1	3.2	555.4	631.2	11.9	618.1	6.0	5722.0
North	4333.3	50.0	1595.9	0.8	523.0	510.2	3.5	694.0	9.0	4802.8
North-east	2962.4	30.2	1574.5	0.6	234.9	393.1	7.0	699.4	4.4	4098.5
South	3912.7	94.7	1322.6	1.1	427.0	666.7	5.2	789.3	7.7	5439.5

Summary statistics: mean; by categories of: reg

where

1) educap = budget allocation from Ministry of Education/total number of students
2) healthcap = budget allocation from Ministry of Health with Health insurance fund/total population
3) socialcap = budget allocation from Ministry of Social development and Human security /total population
4) pmcap = budget allocation from Ministry of Office of Prime minister/total population
5) agricap = budget allocation from Ministry of Agriculture and cooperative/total population
6) transcap = budget allocation from Ministry of Transportation/total population
7) comcap = budget allocation from Ministry of Commerce/total population
8) intcap = budget allocation from Ministry of Interior/total population
9) indcap = budget allocation from Ministry of Industry/total population
10) localcap = local government budget allocation / total population
11) reg2= Central region
12) reg3 = North region
13) reg4 = North east region
14) reg5 = South region

1.2 GINI and Poverty in Thailand

Thai government has focused in poverty reduction by using country's public financial management and optimizing the public services. However, the result shows that the government has been successfully in overall poverty reduction but the inequality remains to be the issue.

From the figure below, Thailand's economic growth rate has been developed successfully. The rate of economic growth improved continuously, as a result the poverty level dropped. However, the inequality rate has remained very high. In the last 20 years, the statistics shows that the rate of economic growth of the country was on the average of 5.1 %, which in the same period the poverty rate had fallen from 40% in 1990 to approximately 10 % in 2009. If focus on the inequality rate as measured by the GINI index, it was constant as 0.49 in 1990 and 0.48 in 2009, reflecting the fact that although poverty rates dropped significantly, the disparity still exists.

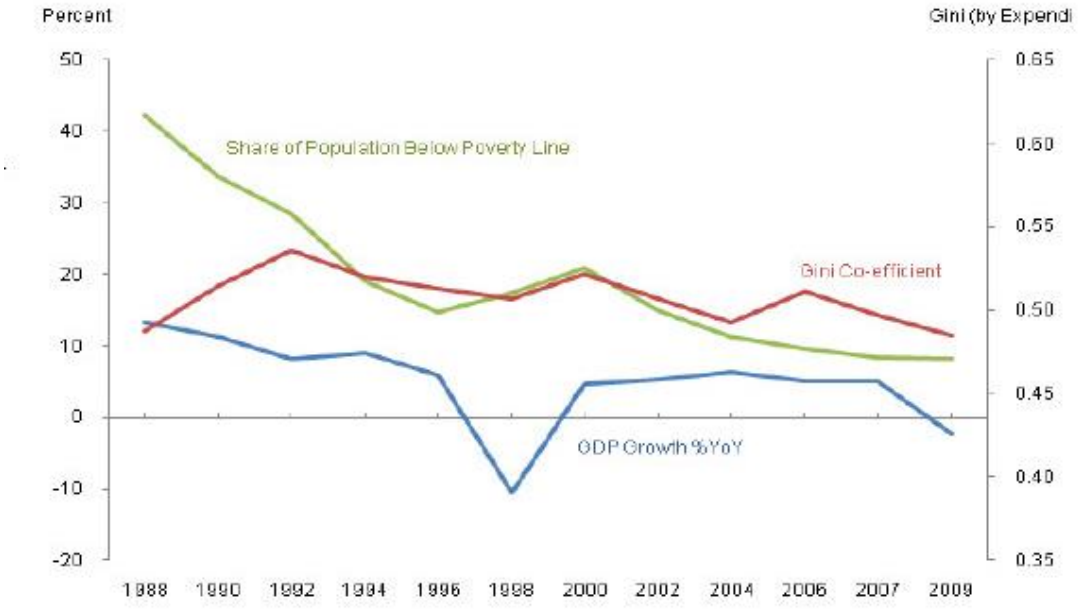


Figure 1.1 Prospects for Economic Growth, Poverty and Income Disparity
Source: Vimolsiri, 2011:42.

Reducing inequality would require more effort. Also the disparity between regions in the country was increasingly, even there has been invested in human development in the country**.** If considering in the regional level, the problem of the inequality were found with the main reason is because of spending in each region had been in the economy of scale which makes economic development was concentrated in the central region and in Bangkok.

Inequality between regions occurred significantly in terms of income and progress in human development. This had been measured by progress in four human development indexes (Health, Education, Transportation and Communication). Statistics showed that Bangkok had all index value higher than all regions. While the Northeast region, the index of health, education, transport and communications sectors were below comparing to other regions.

Data from World Bank (2010) mentioned that Thailand's government had implemented the policy to minimize the inequality earnestly, especially in public finance sector. In the past decade, Thailand's decentralization reforms to local government was extremely transparent and better managed.

Thailand government budget did cluster in Bangkok was more than 10 times comparing to local area. There was a study tried to focus on the equality in budget spending between central and local budgets, the result found that one factor that caused the inequality in Thailand was especially in public services; particularly in education and health care were concentrated in the central region and Bangkok.

The report found that even Thai government reform public finance but there was also quite a serious of disparity in regional spending. Approximately, 72% of government budget had been fallen to Bangkok; while the population was counted only 17% and the share of gross domestic product (GDP) was 26 %. Comparing to northeast region, the population was 34 % and the proportion of GDP was at 12%, but given the budget accounted for only 5.8 % of the total budget.

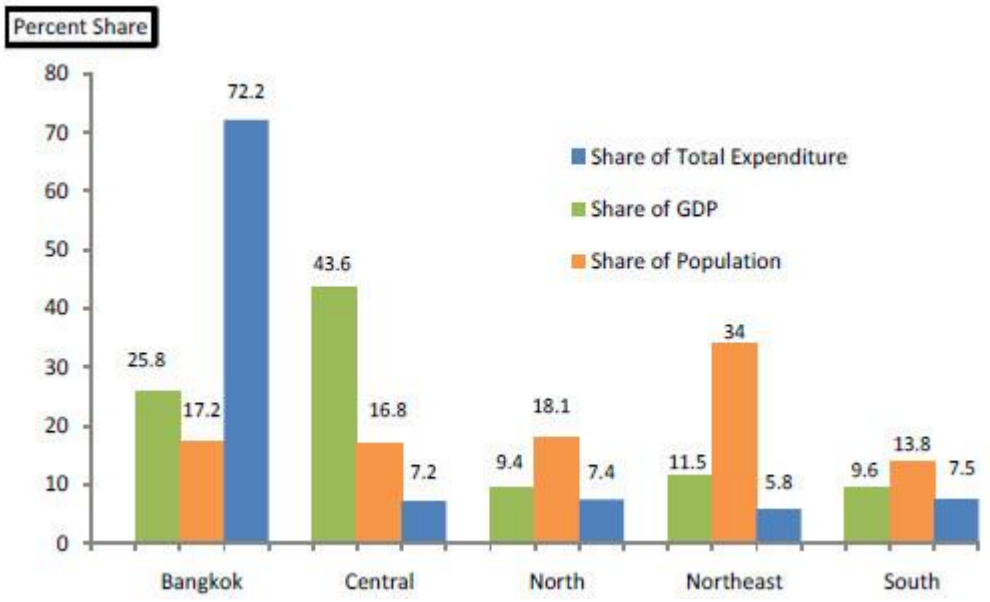


Figure 1.2 Compare Budget GDP and The Population of Each Region (2010)
Source: Ministry of Finance and World Bank, 2010:5.

The report also states that the concentration of expenditure in Bangkok can be explained by several factors:

1) The cost of administration is high

2) The unit cost of providing public services is high compared with other regions.

3) The effects of clumping makes the social services and infrastructure cost higher than other regions.

In normal cases around the world, the expenditure fallen capital cities was more than any other province in the ratio of 5 is in acceptable and in normal rate. However, in Thailand, the difference of the total budget in Bangkok and other regions is accounted for 1 in 10.

The findings also found that another cause of the unequal distribution of the budget comes from grants in purpose of reduce inequality was too low. The process to allocate funding in 2011 was from the total of 173.9 billion baht but only 3.6 billion baht (equivalent to 2% of the total) was subsidized in part to help reduce inequality which was relatively small and cannot affect the targeting group.

1.3 Structure of local governments leading to high cost?

Mrs. Annette Dixon (Director, Regional Operations) revealed in improving service delivery, world bank (2012; report number 67486-TH) that there was a focusing at the coordination between federal governments and local government about a problem of lacking in good coordination which causes an increase in administrative costs. In this report indicates that the decentralization to local Thailand was parallel with the local election commission which had been authorized to make decisions about the allocation of public services and setting priorities of the budget. Meanwhile the chief executive of the province also appoints general officers in local authorities to manage which lead to the redundancy.

Because of the parallel level in local government administration, did push to higher administrative costs and make coordination between central and local government had been in the problem with the unclear and uncertainty on the part of the responsibility. Thus the improving of the local government operations, including the restructuring of the public sector can help reduce costs and make better coordination between central and provincial.

In addition, Mrs. Dixon stated that there were more than 3,000 local governments in Thailand with the population in the area less than 5,000 people which leads to the problem of no economy of scale when allocating the budget and public services. Generally the appropriate rate to set a local government is a population of approximately 10,000 people. So in this case, there should be a merger of local governments to reduce administrative costs.

In this report indicate that in Thailand, the number of local governments (at that time) was 7,853. The small area and small population means the tax base, which is the source of income of governments, is virtually nonexistent. While the expenditure compared to the cost of the administration is relatively high compared to the tax amount received per year. Actually, the local government of the developed world will be populated in the average range of 10,000 -30,000 people.

Several European countries have had success in merging local governments. For example, Finland has used fiscal incentives through grants to voluntary mergers

which lead to a success in reducing the number of local government from 416 in 2005 to 326 in the 2012. Similar in Norway, Sweden, Denmark, Germany and the Netherlands which also succeeded in merging local governments, unlike Finland, the merging gathered force.

For Thailand, World Bank proposed that the consolidation of local government should be in the base of the combination between voluntary and force. Also the adjustment of responsibility scope.

Mr Anwar Shah, a local public relations professional of World Bank, Washington DC, USA, said in improving service delivery world bank (2012; report number 67486-TH) that governments, not only Thailand, especially in European countries were recently facing the problem of mergers because those Governments in the past had been in fully authorization. Mr. Shah explained that the concept of mergers could save administrative costs in overall. If the local government covers less than 5,000 people, the administrative cost would be approximately 75-80%. However, if governments get larger, can save the cost around 5-10% or higher, the manageable of budget for public services is more effectively and efficiently.

In the year 1999, Thailand was in the process of starting dissipation. Found that an administration cost was about 11% of the government budget. In 2011, this administrative expense increased to 18%. So if the administration would be more effectively manageable, it can reduce the cost of this around 3-5% of the budget and to implement a more beneficial result.

Director of the World Bank, Southeast Asia mentioned that the report also focuses on the evaluation of local governments through a system of monitoring and evaluation which also allow more people to participate. The report suggested that the local governments should publish the annual report; especially the objective should be in the same direction as the central government does.

In this report showed that the system for monitoring and evaluation in the federal government and most local government is to focus only on the part of cooperation. The result is still not clear, also the cost itself is quite high and thus missed out from the important goals of the service.

In addition, the report also identified that the current plan of the decentralization reform of Thailand was in a period of transition and still not achieve the desired objectives. Although in the year 1999-2011, the responsibility was transferred to local agencies but still in a limitation. In addition, information related to finance or the services of local authorities still were not sufficient which makes a difficulty to decide whether or not the budget allocation meet the objective.

This paper therefore focuses on and tests income inequality and poverty in Thailand. It will examine which government instrument/ budget spending from which ministry are the most effective in redistributive function, to lower income GINI coefficients and poverty rates.

1.4 Objective of the Study

1) To examine the extent of provincial poverty and inequality and how Thai government budget is allocated by regions and provinces; and specifically to test the hypotheses that government social spending are, by and large, pro-poor.

2) To comment and discuss the potential for policy reform in Thai government budget that help redistribute income from rich- to poor- areas.

1.5 Scope of the Study

This study limits the scope of empirical study cover the relationships between provincial poverty and inequality measures and the government spending using annual data cover the period 2006 to 2011. There are at least two reasons why this paper focuses to this period:

Firstly, after the Constitution 1997, there has been a significant increase in government social expenditures due to constitutional mandates (stipulated in the Constitution as “Basic Policy of State”).

Secondly, this study to focus on the government social expenditures (such as education, health, social welfare) which during the study year, the GFMIS (government financial management information system) had been fully utilized which

are classified by ministries (20 units). However this study chooses to drop some ministries (e.g., Defence and Sciences and Technology) due to their characteristics of "pure public goods".

According to this, this paper will use government budget allocation focus on 9 ministries and local fund: Public health (with health insurance fund), Education, Social Development and Society, Office of Prime minister, Agriculture and corporative, Transportation, Commerce, Interior and Industry

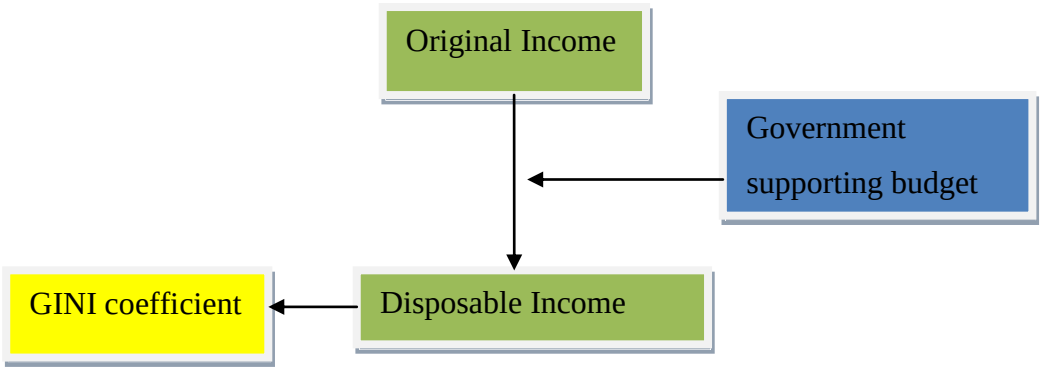


Figure 1.3 Scope of Income Inequality

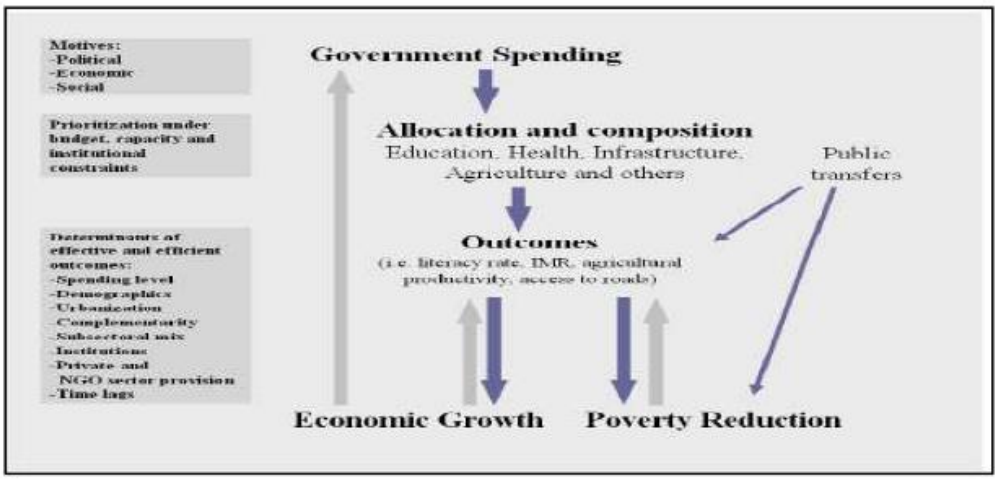


Figure 1.4 Conceptual Framework of Government Spending and Poverty Reduction
Source: Wilhelm and Fiestas, 2005:7.

1.6 Benefit of the Study

1) To understand the root cause of income inequality and poverty in Thailand by the effect of government fiscal policy.

2) To propose which government budget expenditures that might be effective tools to alleviate income inequality and poverty.

1.7 Database and Data Definition

1.7.1 Database

1) Provincial household income and expenditure from HSES database.

2) Database of government spending by provinces from Bureau of the Budget.

3) Provincial CPIs from Bureau of Trade and Economic Indices.

4) Poverty ratio from Office of National Economic and Social Economic Board.

5) Provincial unemployment rate from National Statistic Organization.

1.7.2 Data Definition

1) GINI coefficient: household income per capita, comparing the average of each provincial household per capita income.

2) Pro-poor: a government policy is pro-poor if it benefits the poor proportionally more than the non-poor.

3) Vertical equity: people with higher incomes should pay more tax. Vertical equity seeks to tax in a proportional or progressive way. It implies that people with more ability to pay should pay more tax. Vertical equity is important for redistributing income within society.

4) Horizontal equity: people in identical situations, should be treated the same way. It implies that people with an equal ability should pay equal tax.

1.8 Organisation of the Study

The study is divided into five chapters.

Chapter One introduces the background and study rationale, conceptual frame work, objectives, definition of terms and the study's benefits.

Chapter Two provides a literature review on inequality and poverty, trends and severity. It also examines economic concepts and related inequality and poverty theories.

Chapter Three describes the research methodology, data collection and analysis tools for studying the inequality mechanism.

Chapter Four provides details of experiments on the effect of government expenditure by each ministry on inequality and poverty, by provincial level. It also provides policy implications from special programmes for a specific province.

Chapter Five details the conclusion, policy implications and debates regarding the study results and recommendations. It also provides a conceptual guideline for future study.

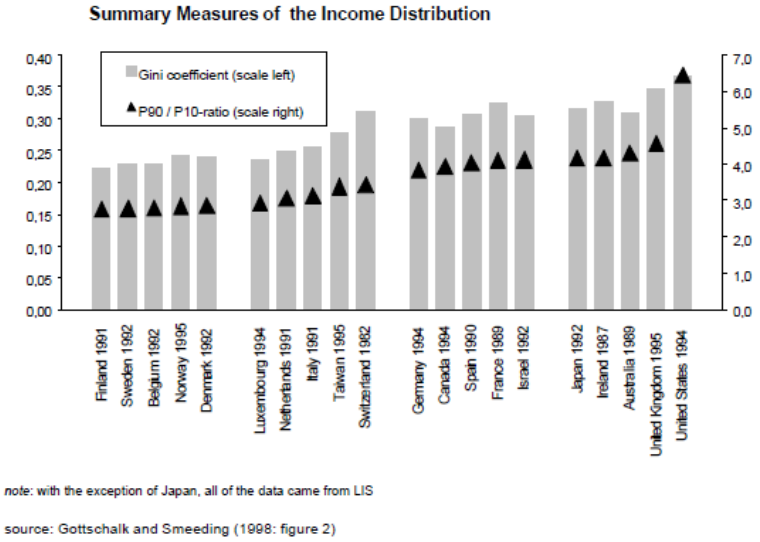
CHAPTER 2

LITERATURE REVIEW

2.1 Inequality and poverty around the world

Caminada and Goudswaard's (2001) study on international trends in income inequality and social policy mentioned that in most Organisation for Economic Cooperation and Development (OECD) countries, income inequality has increased during the last two decades. They investigated whether changes in this can generally be attributed to social policy. The study identified changes over time in the redistributive effect of social transfers to disposable income. The formula used to estimate the social transfer and the reduction in inequality by social security is:

Redistribution by government = (Primary income – disposable income)/ (primary income)



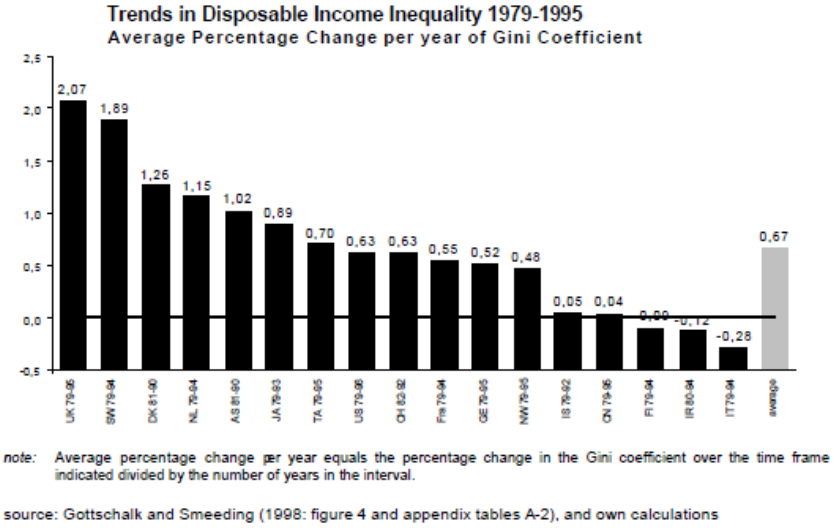
note: with the exception of Japan, all of the data came from LIS

source: Gottschalk and Smeeding (1998: figure 2)

Figure 2.1. GINI Coefficient of OECD Countries in Mid-1990s

Source: Caminada and Goudswaard, 2001: 23.

The results from the Netherlands, between 1977 and 1997, show a significant increase in the inequality of adjusted disposable income (1.15% from the figure below); the spread of GINI was between 12 per cent and 30 per cent, as measured by log deviation. A major cause of the rise in unequal disposable income was from the unequal distribution of primary income. The study mentioned this was the effect of a strong rise in the labour force from secondary earners (women), and the lower progressivity of tax schemes. However, the biggest contribution to inequality is social transfer (39%).



note: Average percentage change per year equals the percentage change in the Gini coefficient over the time frame indicated divided by the number of years in the interval.

source: Gottschalk and Smeeding (1998: figure 4 and appendix tables A-2), and own calculations

Figure 2.2 Trends in Disposable Income Inequality of OECD Countries between 1979–1995

Source: Caminada and Goudswaard, 2001:25.

According to this, especially for the Netherlands, they found that the inequality of disposable income across two decades (1981–1997) increased by about 25 per cent, as measured by mean log deviation (MLD). Almost 40 per cent of the increase in inequality can be attributed to transfers. Another factor was the more unequal distribution of market income. Increasing labour force participation among white collar workers contributed to the increase in inequality. Regarding government budgets, social security reforms had an important effect on increasing inequality in

Netherlands. However, after social security reform, the generosity of that country's income transfer system was still high from an international perspective, even though it was still below the OECD average overall.

To emphasise income inequality and fiscal policy, a study from Bastagli, Coady and Gupta (2012) noted that, although fiscal policy has played a key role in reducing income inequality in advanced economies, its redistributive effect has diminished since the mid-1990s. A combination of progressive income taxes and highly redistributive transfers from government budgets allocation has decreased income inequality by about one third. However, since the mid-1990s, disposable income inequality has increased more than market income inequality, due to reduced redistribution by social benefits and a decrease in the progressivity of income taxes.

From this study by Bastagli, Coady and Gupta (2012), for advanced economies, regarding taxation, a priority for alleviating inequality is to increase the redistributive effect of direct income tax and reduce the opportunity for tax avoidance and evasion. Regarding expenditure, countries will need to avoid the continued decline in most redistributive government expenditure. For developing countries, to enhance the capability of fiscal policy to address income inequality, they will need to strengthen both their resource mobilisation and their capacity to use more progressive taxes and spending instruments. Along with advanced economies, developing economies should focus on both tax and expenditure. Governments should focus on expanding corporate and personal income tax bases by reducing tax exemptions and improving tax governance to increase the country's revenue, financing progressive transfers. Conversely, governments should focus on social expenditure aimed at protecting households from poverty and improving education and health outcomes among disadvantaged households. Transfer programs should play a vital role in social protection strategies; expanding the scope to cover all target systems.

A similar study by Benabou (2000), who tried to develop a theory of inequality and social contract in an absence of complete insurance and credit markets, revealed that redistributions that increased welfare in the past required less political support in unequal societies than in a more equal ones. Currently, lower rate

redistribution increase the inequality of future incomes, due to wealth constraints on investment in human and physical capital.

Focusing on the effects of tax deductibility on state and local communities to income inequality, Feldstein and Metcalf (1987) revealed that the deductibility of tax affects the way state and local governments finance their spending. This was further examined by Chu, Davoodi and Gupta. They researched the effect of government social spending on inequality for developing countries during three decades (1970s, 1980s and 1990s), using the equation below:

$$G_{it} = c_0 + c_1 r_{it} + c_2 r_{it} d_{it} + c_3 s_{it} + c_4 u_{it} + c_5 k_{it} + c_6 x_{it}$$

Where:

1) G= GINI
2) r = Ratio of direct to indirect tax
3) d = Ratio of direct tax-to-GDP
4) s= Secondary school enrolment rate
5) u = Urbanisation
6) k= Transition dummy (country)
7) x = Inflation dummy

Surprisingly, the main results revealed that on average, income inequality in developing countries is lower than in industrial countries. However, many developing countries experienced an increase in income inequality based on pre
and post-tax income measurement. Developed countries improve distribution effectively by taxes and government-specific budgets, while developing countries do not have adequate redistributive programmes to achieve post-tax, post-transfer income equality. Furthermore, in general, education, health and transfer programmes in developing countries showed progression but were not well targeted. All primary and secondary education programmes had a progressive incidence, but less effective targeting to the poor. Similarly, with health programmes that were progressive, only half were well targeted. In addition, 90 percent (14 out of 15) of the transfer programmes were progressive, but 60 percent (9 out of 15) were not well targeted.

While many global and country-specific factors might contribute to the widespread increase in income inequality, sound economic and social policies assist the distribution of income. Possible factors affecting inequality in low income and middle income countries were the restructure of macroeconomic policies. For example, Jamaica, Indonesia and 12 OECD countries in the late 1980s and early 1990s) improved inequality by focusing on the distribution of income, limiting the redistributive effect of taxes. This can see from studies of the effect of progressive personal income tax and before/after-tax GINI coefficient; there is no evidence to show the effect of tax on equality.

Looking at countries like Chile, Engel, Galetovic and Raddatz (1997) quantified the direct effect of taxes on income distribution at the household level. They estimated the distribution effect of several changes in the tax structure. Their study shows that income distribution pre-post taxes for Chile at that time were very similar. Income tax evasion and avoidance was quite large, around 27 per cent of the potential tax base. Moreover, the targeting of expenditure, the transfer programmes and levels of the average tax rate were not effective in broadening income distribution. This study proposed focusing on the amount to be redistributed, the targeting of public spending and the relative efficiency of alternative taxes, instead of on the tax system's progressivity. With Chile, once the targeting of expenditures was taken into account, high-yield indirect taxes were responsible for 80 per cent of the reduction in income inequality.

Lundberg and Squire's (1999) study tested whether growth and inequality were joint outcomes. They conducted experiments, using 757 observations from 125 countries in Europe and Central Asia, disaggregated by population groups. The results showed that policies had different effects for different population groups within an economy. Each particular policy correlates with growth overall, but there was no correlation with sub-groups (poor and non-poor). In addition, regarding inequality, the results showed that the correlation of policies with the aggregate GINI did not imply a correlation to each population group, with a specific growth rate. Accordingly, Lundberg and Lyn concluded that the simultaneous examination of growth and inequality yields significantly different results. Policy related information cannot be

obtained from analysis of each independently. Also, they found evidence of mutually exclusive policies, which suggest that an appropriate combination of policies can allow policy makers to move towards their preferred outcome in growth and equality.

Bastagli, Coady and Gupta (2012) studied income inequality in most advanced and developing countries during 1990–2005. They found that the redistributive effect of fiscal policy in developing countries was seriously restricted by lower levels of taxes and transfers. Compared to advanced countries in which average the tax ratio exceeds 30 per cent, the tax rate in developing countries falls in the range of 15 to 20 per cent of GDP. As lower government income (tax), this leads to substantial reductions in the redistributive potential of fiscal policy. As a result, regarding expenditure, both low spending and poor targeting limit the capacity of transfer programmes. Even with some insurance schemes, participation rates in developing countries were restricted to a high income population group, for example, in the early 2000s, only 40 per cent of legal retirement age people received a pension, compared to 90 per cent in European countries. According to this, fiscal transfers in developing countries can mitigate the adverse effects on inequality if they are accompanied by improvements in the progressivity of overall tax and transfers. Expenditure reductions during fiscal policy adjustment can improve equality, since a large share of government spending in developing countries is not progressive. Also, promoting social insurance schemes can enhance a government's capability to protect households during fiscal policy adjustment.

Benabou (2000) developed a theory of inequality to explain how countries with similar economic fundamentals sustain such different systems of social insurance and fiscal redistribution. The proposed answer is that in the absence of insurance and credit markets, redistributions that would rise pre-welfare need less political support in unequal societies. A lower rate of redistribution can increase the inequality of future incomes, due to constraints in human capital and investment.

In the case of Latin America, Goni, Lopex and Serven (2008) stated that high inequality reflected the failure of fiscal policy on redistributive function. If inequality is higher than a set level, general policy should target the deep causes of inequality by interventions that expand ownership and equal opportunity, such as health and

education. Policy, such as government expenditure , should ensure the fiscal system performs its redistributive function effectively. Regarding Latin America, the big difference in income inequality between Latin America and more developed countries lay not so much in market forces but in the redistributive power of the state. The gap between these regions in terms of income inequality is much bigger after taxes and public transfers than before such redistribution. In Latin America, public transfer volumes are smaller compared to developed countries like those in Europe. Targeting programmes for the given volume are also not well targeted.

From figure 2.3, if considering the transfer volume, Latin America spent less than half compared to Europe. Six Latin American countries invested in transfers amounting to about 7.3% of GDP; Europe had more than 16 per cent of GDP on transfer. Apart from the volume invested in transfer, their targeting programmes were also ineffective. In Latin America, transfers tended to flow to the richest quintiles population group(Q5), while the poorest(Q1) received only eight per cent of the flow. For Europe, the transfer is distributed in fully egalitarian rule; each quintile receives approximately 20 per cent of total transfer.

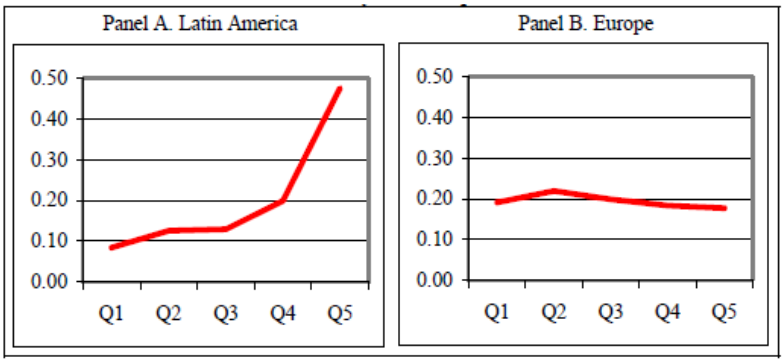


Figure 2.3 Public Transfer in Latin America and in Europe by Income Quintile
Source: Goni, Lopex and Serven, 2008: 56.

In Latin America, pensions and unemployment insurance are two programs, which combined account for the bulk of social insurance, but this transferring is regressive. The two top quintiles of the population receive about 80 per cent of total

flow. However, this does not mean that all social insurance programmes in Latin America are poorly targeted; cash transfer programmes are strongly progressive, with almost 75 per cent of total budget flow to the bottom two quintiles of people.

This situation can explain the failure of the region's fiscal systems to perform their redistributive functions. The study also reviewed three potential explanatory factors for why Latin America does so poorly at fiscal redistribution. Firstly, it has too low a volume of resources collected to be transferred. Secondly, it has a regressive tax system and finally, no effective targeting programmes are pro-poor.

For an analysis of the factors that determine income inequality in Thailand, Motonishi (2003) experimented on the effects of agricultural factors and other sectoral factors on income equality from 1975 to 1998, with 116 observations.

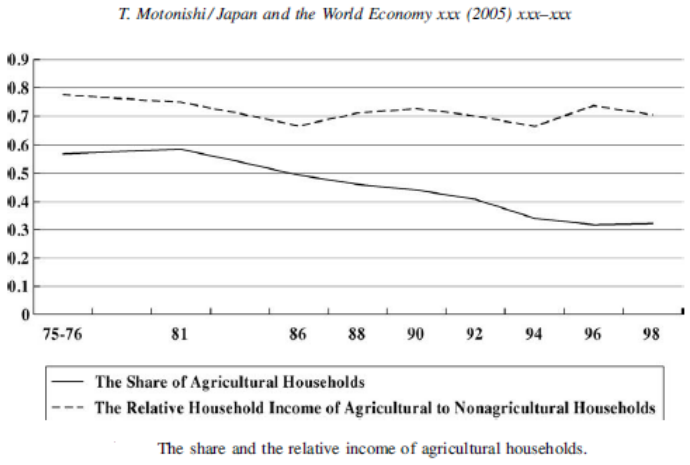


Figure 2.4 The Share and The Relative Income of Agriculture Households
Source: Motonishi , 2003.

The model below was applied to the experiment:

$$(\mathrm{MLD}' \text{ or } \mathrm{GINI}') = \alpha + \beta_1(\mathrm{DUAL} \text{ or } \mathrm{MLD_B} \text{ or } \mathrm{GINI_B}) + \beta_2 \log(Y) + \beta_3 \mathrm{FIN} + \beta_4 \mathrm{EDU} + \beta_5 \mathrm{AGE} + u.$$

DUAL, MLD_B and $GINI_B$ are the agricultural and non-agricultural sector disparities. Log(Y), FIN, EDU, AGE and *u* are the log of average household income, a financial development measure, education level disparity, average age and an error term, respectively.

Regression results strongly suggest the significance of agriculture factors. In Thailand, the effect of agriculture and non-agriculture disparities to household incomes is larger than other determinants, such as financial development or educational level. For household income, the study found a significant effect of distribution on income. Although there is possible interaction between income and inequality that can cause endogeneity problems, this study applied log(Y) (or the change of income) as a determinant of income inequality in regression analysis. For the effect of financial service, M2/GDP is a measurement of financial development in this study, the regression analysis show the negative effect to inequality. For the effect of education on inequality, the result also show a positive sign, which means that higher education, higher inequality. This result supported by Li (2002), whose study concluded that a more educated population can restrain the richest segment of society. For the effect of ageing, this study applied the average age of household heads as an explanatory variable, the results show in the negative, meaning that a higher average age of household head resulted in lower income inequality.

From the perspective of reducing poverty for Indonesia, Birowo's study mentioned the result that significant increases in the amount of expenditure by the Indonesian government have not had a significant relationship with decreases in poverty. Examination is needed to resolve a reliable budget allocation. The study concluded that the government should emphasise budget allocation rather than budget size, which is a key instrument for the government to promote economic development and to reduce absolute poverty. The results show that firstly, only expenditure in the education and industry sectors had a significant negative relationship with poverty rates during 1976 and 1996 (before budget reform); therefore, the result also ascertained that allocation is important.

Sylwester (2000a) conducted cross-country studies in OECD countries, Latin America, East Asia and Africa from 1970 to 1990. The results show that countries

with more invest in public education as a percentage of GDP had lower income inequality, even though the effects were slow to be realised. Sylwester used the change in income inequality as a measurement to limit the potential for reverse causation:

$$\Delta \text{INEQ}_i = \alpha X_i + \beta \text{GEE6069}_i + \gamma Z_i + \epsilon_i$$

Where:

1) ΔINEQ=INEQ90 - INEQ70
2) GEE6069: Average ratio of education expenditures to GDP from 1960–1999
3) X: Control variables
4) Matrix Z: Other control variables to determine the robustness of earlier findings

The result is shown in Table 2.1 below.

Table 2.1. The Relation of Inequality with Other Variables (Least Square Regressions, Dependent Variables is ΔINEQ)

Column	(1)	(2)	(3)	(4) OECD	(5) LDC
Constant	149.4668 (91.0719)	112.9233 (93.8924)	124.5366 (101.9735)	37.7607 (54.4581)	2.0402 (11.7877)
LGDP70	−34.2342 (22.5008)	−25.3216 (22.6339)	−27.7465 (25.0802)	−5.8436 (6.2898)	−0.5526 (1.6607)
HUM70		1.6807*** (0.5545)	1.6392*** (0.5510)	3.0048*** (0.6379)	1.7100* (0.9714)
GEE6069	−142.1178** (66.9226)		−146.3729* (84.9644)	−148.9432* (76.9261)	−105.2817 (87.9737)
EASIA	3.1569 (2.0003)	2.2458 (1.9392)	2.4003 (2.0378)		−0.9532 (3.0488)
AFR	10.7436** (4.6119)	10.1712* (5.2300)	10.1691* (5.1922)		17.1505*** (2.6229)
LAAM	−1.5639 (2.1519)	−1.8973 (2.3183)	−2.3603 (2.3431)		−2.8244 (2.5389)
OECD	−1.3358 (2.7399)	−2.9520 (2.6232)	−2.3968 (4.8232)		
POP70	−0.9363 (0.6649)	−0.8090 (0.7339)	−0.8508 (0.6920)		
BMP7074	4.5729*** (1.3341)	4.5837*** (1.3108)	4.5489*** (1.2825)	−126.8236 (152.1656)	4.4272*** (0.7724)
POL7274	−0.6256 (0.4900)	−0.8222 (0.5311)	−0.7713 (0.5341)		
PIN7074	−6.0384 (15.0739)	−5.8993 (14.5028)	−7.0247 (14.7956)		
SQLGDP70	2.0479 (1.4619)	1.7061 (1.5074)	1.6001 (1.6060)		
GDE6069	36.1985 (35.4874)	18.2226 (34.4124)	22.2417 (34.4125)		
GVX6069	11.2788 (15.5683)	7.4622 (14.8763)	10.8165 (14.3383)		
ASEC70	0.2604*** (0.0775)				
AHIGH70	−0.0532 (0.2192)				
LGEEX6069		−4.5578* (2.2510)			
OGEE6069			−11.6364 (112.6134)		
INF6089				−0.7548 (0.6546)	−0.2600*** (0.0960)
STINF6089				1.0743 (0.8477)	0.1265*** (0.0439)
R^2	0.6533	0.6268	0.6292	0.6910	0.6440
Number of observations	50	50	50	19	30

[a] All regressions use White's correction for heteroskedasticity.
* Statistically significant at the 10% level.
** Statistically significant at the 5% level.
*** Statistically significant at the 1% level.

Source: Sylwester, 2000a: 47.

The results show a negative relation between the changes in income inequality and education expenditure. The table also separates the effect of education expenditure in OECD and Non-OECD countries; for OECD countries, the coefficient of public education expenditures is -149, and significant at ten per cent confidence intervals. Conversely, in less developed countries, the coefficient shows –105, with less magnitude compared to developed countries; there is no significance at the ten per cent interval.

These findings argue that support for education is beneficial for raising human capital, rather than boosting economic growth. This is supported by related studies such as those from Easterly and Rebelo (1993) and Sylwester (2000a). Both studies

report that education expenditures are either not associated with economic growth, and perhaps even lower growth in the short term. In addition, the results appear public education expenditures slowly lessen income inequality in less developed countries.

However, Sylwester (2000a) has developed a model where public education can lower an agent's inequality if they, he or she has enough resources to attend school. If agents are too poor, education distribution can lead to more inequality, as the poor still need to be taxed in some way, but cannot get the benefits of education.

Barro (2000) studied education and inequality in broad panel countries during 1960 to 1990. The study includes the average years of school attainment for adults aged 15 and above in three levels: primary, secondary and higher.

Table 2.2 Determinants of Inequality

	No Fixed Country Effects					
Variable						
log(GDP)	0.407	0.407	0.437	0.415	0.443	0.401
	(0.090)	(0.081)	(0.078)	(0.084)	(0.074)	(0.073)
log(GDP) squared	−0.0275	−0.0251	−0.0264	−0.0254	−0.0280	−0.0253
	(0.0056)	(0.0051)	(0.0049)	(0.0053)	(0.0047)	(0.0046)
Dummy: net	—	−0.0493	−0.0480	−0.0496	−0.0515	−0.0517
income or spending		(0.0094)	(0.0087)	(0.0094)	(0.0090)	(0.0087)
Dummy: individual	—	−0.0134	−0.0143	−0.0119	−0.0146	−0.0146
vs. household data		(0.0086)	(0.0080)	(0.0087)	(0.0084)	(0.0082)
Primary schooling	—	−0.0147	−0.0152	−0.0161	−0.0065	−0.0094
		(0.0037)	(0.0036)	(0.0037)	(0.0039)	(0.0038)
Secondary schooling	—	−0.0108	−0.0061	−0.0109	−0.0176	−0.0174
		(0.0070)	(0.0070)	(0.0070)	(0.0067)	(0.0065)
Higher schooling	—	0.081	0.072	0.082	0.099	0.097
		(0.034)	(0.032)	(0.034)	(0.032)	(0.032)
Dummy: Africa	—	0.113	0.135	0.113	0.116	0.115
		(0.015)	(0.016)	(0.015)	(0.014)	(0.014)
Dummy: Latin America	—	0.094	0.089	0.092	0.095	0.095
		(0.012)	(0.012)	(0.012)	(0.012)	(0.011)
Rule-of-law index	—	—	−0.040	—	—	—
			(0.019)			
Democracy index	—	—	—	−0.003	—	—
				(0.015)		
Openness	—	—	—	—	0.050	0.422
					(0.013)	(0.113)
Openness*log(GDP)	—	—	—	—	—	−0.0445
						(0.0133)
Number of observations	49, 61	40, 59	40, 57	35, 59	38, 55	38, 55
	68, 76	61, 70	56, 67	61, 70	57, 64	57, 64
R-squared	0.12, 0.15	0.52, 0.59	0.50, 0.58	0.56, 0.59	0.61, 0.64	0.63, 0.63
	0.18, 0.22	0.67, 0.67	0.78, 0.72	0.67, 0.67	0.69, 0.72	0.74, 0.74

Source: Barro and Forbes, 2000: 23.

The results show that primary schooling is significantly and negatively related to income inequality. Secondary level schooling also shows a negative but insignificant correlation. In contrast, there is a positive and significant relationship between higher schooling and income inequality.

Van Doorslaer (1997) studied income-related inequalities in health in industrialised countries. The results suggested that although it was not necessarily true that income-related health inequality was closely related to income inequality, there does appear to be a correlation between the ill-health concentration index and the GINI coefficient for disposable equivalent income. However, the correlation is not perfect. Sweden and the United Kingdom (UK) are interesting outliers. In contrast to the UK, Sweden shows a lower health inequality than would be expected if considered on its given income inequality. The study also explored additional factors that might affect some of the variation in health inequality not explained by income inequality; however, these variables were jointly insignificant in a regression explaining cross-country differences in health inequality.

Leal, Dayton, Demery and Mehra (2000) studied public subsidies on health care in terms of efficiency and equity in African countries, using the benefit incidence of public spending on curative health care as a measurement. The model is shown below:

$$x_j \equiv \sum_{i=1}^{3} \frac{H_{ij}}{H_i} \left(\frac{S_i}{S} \right) \equiv \sum_{i=1}^{3} h_{ij} \, s_i$$

Where:

1) $X_{j:}$ Value of the total health subsidy to group j
2) H_{ij}: Number of health visits of group j to health facilities at level i
3) $H_{i:}$ Total number of visits across all groups
4) S_i: Government net spending on health care at level i

The result was as below:

Table 2.3 Benefit Incidence of Public Spending on Health in Selected African Countries

Benefit incidence of public spending on health in selected countries

Country	Quintile shares of								Total subsidy as % of per capita expenditure	
	Primary facilities		Hospital outpatient		Hospital inpatient		All health			
	Poorest	Richest	Poorest	Richest	Poorest	Richest	Poorest	Richest	Poorest	Richest
Africa										
Côte d'Ivoire (1995)[a]	14	22	8	39			11	32	2.0	1.3
Ghana (1992)	10	31	13	35	11	32	12	33	3.5	2.3
Guinea (1994)[a]	10	36	1	55			4	48		
Kenya (1992)[a, b]	22	14	13	26			14	24	6.0	1.1
Madagascar (1993)[a]	10	29	14	30			12	30	4.5	0.5
United Republic of Tanzania (1992–93)	18	21	11	37	20	36	17	29	NA[c]	NA
South Africa (1994)[a]	18	10	15	17			16	17	28.2	1.5
Others										
Indonesia (1990)	18	16	7	41	5	41	12	29	1.0	0.5
Viet Nam (1993)	20	10	9	39	13	24	12	29	2.1	0.9

[a] Hospital subsidies combine inpatient and outpatient spending.

[b] Rural only.

[c] NA = not available.

Source: Leal et al., 2000 :70.

From Table 2.3 above, two messages are delivered. Firstly, curative health spending in Africa was not well targeted to the poorest. Subsidies flowing to the poorest were approximately 20 per cent less than the flow to the richest. Secondly, health spending was progressive; subsidies to the poorest group amounted to a higher share of that group's total household expenditures than did the subsidy to the richest quintile, especially in South Africa. This means that with other factors being constant, if the government provided all households with an annual income transfer (not in health subsidy), the income expenditure distribution would be improved.

This study by Leal et al., (2000) also concluded that one of the most important factors for weak targeting was positive income elasticity. In the long term, there should be a strategy to encourage private providers so that public subsidies can be directly targeted to the poor. In addition, changes in household behaviour should be encouraged. Public health awareness programmes should be targeted to poor geographical areas, so that the poor can recognise an illness and appreciate a timely health care service.

Gwatkin (2000) studied targeting health programmes to the poor by geographic targeting across countries. Poverty is unevenly distributed across a country or other geographic areas, so to increase the effective distribution of health subsidies, focus is required on the likelihood that health (or other) programmes will reach those most in need. One way is to give priority to those geographic units in which the poor tend to cluster. An example of geographic targeting is that the poor often cluster in rural areas. This is done because in the rural area, generally there is a belief that an income is lower and poverty is more prevalent than in the cities.

This study explored an Indian case where about 45 per cent of the rural population lived below the poverty line. The programme offered services to everybody in those poorest states containing about 25 per cent of India's total rural population. If calculated in term of country level, it would reach around 32 per cent of the county's rural poor. In Romania, most of the population is in the upper middle income group, with around 20 per cent of the population living below the poverty line. Offering services to everyone in a region will flow to the poorest, approximately 25 per cent of the population. If calculated in terms of a country's level, it would reach roughly 30 per cent of the country's poor.

In addition, Gwatkin (2000) mentioned that geographic decisions are notoriously affected by politics in almost all locations. In other words, poor areas have limited political influence so they are poor. Beyond this there is another factor, the administrative weaknesses that can be found in poor areas. With incompetent administration, targeting a poor district might well result in a programme that serves fewer poor people per unit of resource. In a competently administered area, the benefit from investment in each activity can flow to the targeted group more efficiently in terms of quality and quantity.

Focusing on Thailand, Healy and Somchai Jitsuchon (2006) revealed that, Thailand has moved towards more local control of policy implementation, to solve the problem of poverty and inequality, as a more balance has developed between local and federal authorities. They have provided the first estimation of Thai poverty and inequality at a geographical level below the provincial level, and compared the estimate to the household survey. They obtained results by combining the 2000 Socio-

Economic Survey with the 2000 Population and Housing Census. The results showed that estimates of poverty and inequality corresponded closely to the provincial level. The estimates found in the poverty map are within a 95 per cent confidence interval, similar to inequality estimates from socio-economic status (SES). If considered on regional level, the poverty map and SES show an extremely close correspondence. Accordingly, this testing has confirmed that the SES data on province levels is appropriate for use in the models analysing predicted income and consumption.

Son (2006) used the 1998 Socio-Economic Survey. She derived poverty elasticity for a general class of poverty and proposed a pro-poor index that could be used to assess government expenditure and tax policies:

$$\phi_i = \frac{\eta_{\theta i}\mu}{\eta_\theta \mu_i}$$

Where:

1) φ_i is greater (less) than 1 implies that the i^{th} component is pro-poor (anti-poor)

2) φ_i measures the marginal benefit in terms of reducing poverty of an extra dollar spent on the i^{th} income component.

The study attempted to evaluate government's tax policies and public spending through investigating their marginal effects on poverty.

The results showed that government subsidies to in-kind incomes benefit the poor more than the non-poor, and minimise poverty. However, if a subsidy is in the form of money, it would benefit the non-poor more than the poor. In addition, she focused on the marginal effect on poverty that was due to the effect of indirect taxes on price. Price increases in food were from increases in indirect taxes; they definitely hurt the poor more than the non-poor. However, price increases led to negative effects on the non-poor more than the poor, if they were from communication and recreation. Personal and corporate income tax and wealth are ineffective, which leads to the reliance of Thai governments on indirect taxes. This is despite the common observation that heavy taxation of consumers burdens improving equity and reducing the poverty. All in all, the main point is that the pro-poor index from the study

suggested that while there is in-kind government subsidies, these will benefit the poor more than the non-poor and achieve the maximum reduction in poverty.

For the effect of inflation or monetary policy on income inequality, a study from Galli and Hoeven (2001) in developed economies (US and 15 OECD countries) from 1966 to 1999, found that during high inflation, countries with restrictive monetary policy were beneficial for inequality. They experimented using the fixed effect (FE) regression model below:

$$G_{it} = \alpha_i + \beta_1 \pi_{it} + \beta_2 \pi_{it}^2 + \gamma y_{it} + \varepsilon_{it}$$

Where:

1) G_{it} is the GINI index in country
2) i at time t; i is a country-specific FE
3) π_{it} is long run inflation
4) y_{it} is long run real GDP growth
5) ε is a standard normal error.

The relation is shown in a U-shaped long run between inflation and inequality. However, in economies with initially low inflation, reducing low inflation will increase inequality. As a result, the empirical evidence regarding inflation and inequality is puzzling. This study also mentioned that while restrictive monetary policy can be expected to deteriorate income distribution in the short term, in the long term the effect is different, depending on the initial rate of inflation. When the initial inflation rate is high, the effects of restricted policy on income distribution can be expected to be beneficial. In contrast, when initial inflation is initially low, the effects of disinflation on income distribution might be harmful.

The scarcity of cross-country and cross-time data inequality ensures it is difficult to estimate the hypothesis regarding the factor of income distribution with a high degree of confidence. Supported by Mocan's (1999) US study, decomposition of inflation shows that anticipated inflation has no effect on income distribution, but unanticipated inflation can redistribute income from the rich to the poor.

Builiu and Gulde (1995) study on the empirical link between inflation and income distribution, examined both cross-section and time-series. The results showed

that inflation was able to minimise the unexplained differences in income distribution. In a pool of cross-countries, after controlling for other factors, a higher fluctuation in inflation led to higher inequality. Likewise, a different income group is systematically related to the rate of inflation. For the cross-country experiment, they used the model below:

$$G_i(t) = f(c,\ y_i(t),\ y^2{}_i(t),\ \pi_i(t),\ \sigma(\pi)_i(t),\ \sigma(e)_i(t),\ EXP/GDP,\ country)$$

Where:

1) G : Post-tax GINI coefficients
2) c : A constant referring to the level of income distribution in the United States
3) y and y^2: Measurement in income
4) $\Pi_{it:}$ The level of contemporaneous inflation
5) $\sigma(\Pi)_i(t)$: The variability of inflation
6) $\sigma\ (e)_i(t)$: The variability of the nominal exchange rate
7) EXP/GDP : Public expenditure to GDP
8) country: represents 17 country-specific dummies capturing idiosyncratic factors relative to the United States.

The results show (see Table 2.1.4) that GINI is statistically significant with the expected signs for the independent variables in the model. Especially for higher inflation and higher variability of inflation and the nominal exchange rate, this leads to worsening income inequality. In the short term, an increase in the GINI, because of ten per cent annual inflation, is small.

Table 2.4 Effects of Inflation on Income Distribution (Cross-Country Evidence) (OLS Results for Time-Series)

Equation Number	Constant	y (A)	y^2 (A)	y (B)	y^2 (B)	EXP/GDP	$\pi_i(t)$	$\sigma(\pi)_i(t)$	$\sigma(e)_i(t)$	R^2	SEE	N
1	0.445**	0.0052*	-0.0005*	--	--	-0.0005*	0.00001**	--	--	0.88	0.019	121
	(14.01)	(1.70)	(1.72)			(1.81)	(4.71)					
2	0.398**	0.0009	-0.00002	--	--	-0.0009**	--	0.0021**	--	0.94	0.014	114
	(25.92)	(0.50)	(0.18)			(3.10)		(2.43)				
3	0.447**	0.0052*	-0.00051*	--	--	-0.0005*	--	--	0.0004**	0.88	0.019	123
	(13.91)	(1.74)	(1.78)			(1.65)			(4.91)			
4	0.311**	--	--	0.0012	-0.0000	-0.0009**	0.00001**	--	--	0.88	0.020	118
	(2.67)			(0.63)	(0.07)	(2.46)	(4.58)					
5	0.420**	--	--	0.0020*	-0.00002	-0.0008**	--	0.0023**	--	0.94	0.014	111
	(7.70)			(1.80)	(1.51)	(3.40)		(2.55)				
6	0.323**	--	--	0.0008	-0.0000	-0.0009**	--	--	0.0004**	0.87	0.020	120
	(2.75)			(0.53)	(0.01)	(2.12)			(4.75)			

Source: Builiu and Gulde, 1995: 7.

When focusing on a single country, Buliu and Gulde (1995) applied the model below to explain the level of overall income distribution with the other interested factors:

$$G(t) = \alpha + \beta\pi(t) + \gamma U(t) + \delta T(t) + e(t)$$

Where:

1) G(t): GINI coefficient of income distribution

2) $\pi(t)$: Current rate of inflation

3) U(t) : Current overall unemployment rate

4) T(t) : A linear trend separating secular trends in the income distribution data from cyclical influences

5) e(t) : Error term.

After that, they applied the study by Blinder and Esaki, which considered the relative income shares of different segments of the population to represent inequality. According to this, the estimated model then becomes:

$$S_i(t) = \alpha_i + \beta_i\pi(t) + \gamma_i U(t) + \delta_i T(t) + e_i(t)$$

Where:

1) S_i (t) is the share of i_{th} quintile (i=1-5)

The results show (see Table 2.1.5) that for the US, Finland and Italy, inflation is able to lower inequality in the distribution of income; whereas in Canada, Greece, Israel and Russia higher inequality results.

In addition, Buliu and Gulde (1995) conducted a further study by disaggregated results and found that it was much more diverse, lacking a universal effect across countries of inflation or unemployment on income distribution. The effect on income distribution by inflation and unemployment appear to be strongest at the top and bottom income groups, rather than on the middle income group.

Table 2.5 Effect of Inflation on Income Distribution by Each Quintile

Dependent variable	United States 1/	United Kingdom 2/	Canada 3/	Japan 4/ Expected inflation	Japan 4/ Unexpected inflation	Italy 5/	Greece 6/	Sweden 7/	Finland 8/	Israel 9/	Russia 10/
Gini coefficient	-0.005 (3.69)	0.000 (0.01)	0.0003 (0.65)	n.a.	n.a.	-0.00137 (2.50)	0.023 (4.00)	n.a.	-0.0003 (0.42)	0.00003 (1.57)	0.000007 (0.19)
Bottom quintile	0.031 (2.82)	0.02 (1.80)	-0.0111 (0.78)	-0.008 (0.67)	-0.038 (3.05)	0.0297 (2.32)	-0.036 (2.40)	0.0005 (1.66)	-0.0200 (0.60)	-0.00079 (1.85)	-0.00049 (0.38)
Second quintile	0.010 (0.77)	-0.03 (1.80)	0.0022 (0.08)	-0.035 (2.33)	-0.061 (3.90)	0.0317 (1.95)	-0.027 (4.10)	0.0007 (3.50)	0.0438 (1.26)	-0.00073 (1.53)	-0.00022 (0.24)
Third quintile	-0.007 (0.50)	0.01 (0.64)	-0.0176 (1.33)	n.a.	n.a.	0.0402 (2.25)	-0.009 (3.03)	-0.0003 (1.50)	0.0084 (0.32)	-0.00038 (0.64)	0.00134 (1.88)
Fourth quintile	-0.023 (1.64)	-0.01 (1.46)	0.0107 (0.94)	-0.073 (3.75)	0.004 (0.20)	0.0135 (1.09)	-0.001 (0.27)	-0.0004 (4.00)	-0.0101 (0.21)	-0.00050 (0.58)	-0.00140 (1.23)
Fifth quintile	-0.005 (0.16)	-0.01 (0.34)	0.0158 (0.37)	0.075 (2.36)	0.127 (3.87)	-0.1150 (2.42)	0.013 (3.30)	-0.0011 (2.75)	0.0015 (0.03)	0.00263 (1.46)	0.00077 (0.28)
Top five percent	-0.008 (0.24)	-0.01 (0.32)	n.a.	0.071 (2.90)	0.081 (3.35)	n.a.	-0.050 (1.00)	n.a.	n.a.	n.a.	n.a.
Top ten percent	n.a.	n.a.	0.0231 (0.62)	n.a.	n.a.	n.a.	n.a.	n.a.	0.0062 (0.18)	0.00213 (1.25)	n.a.

Source: Builiu and Gulde, 1995: 9.

Table 2.6 Effect of Inflation on Income Distribution in Selected Countries

Country	Gini coeff.	Income share of lowest quintile	Income share of second quintile	Income share of third quintile	Income share of fourth quintile	Income share of top quintile
U.S.A.	↓	↑	...	...	↓	...
U.K.	...	↑	↓	...	↓	...
Canada	...	...	...	↓	...	...
Japan	n.a.	↓	↓	n.a.	↓	↑
Italy	↓	↑	↑	↑	↑	↓
Sweden	n.a.	↑	↑	↓	↓	↓
Finland	...	...	↑	...	...	...
Greece	↑	↓	↓	↓	...	↑
Israel	↑	↓	↓	...	...	↑
Russia	...	...	...	↑	↓	...

Source: Builiu and Gulde, 1995: 15.

Mocan (1999) also studied unemployment using the OLS method to regress the change in structural and cyclical unemployment to income share. In summary, the study reveals that income inequality was countercyclical in behaviour. The increase in unemployment had a negative effect on low income people. He studied unemployment as both structural and cyclical in the USA: the decomposition of these two types of unemployment showed that an increase in structural unemployment increased the income of richer, and lowered the income of poorer people. As a result, this effect led to higher inequality. The tables below illustrate these results.

Table 2.7 Structural and Cyclical Unemployment and Income Inequality

	Structural Unemployment from Fitted Trend				
Explanatory Variables	Lowest Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Highest Quintile
Constant	0.210	0.295*	0.393**	0.285	−1.165
	(1.609)	(1.914)	(2.277)	(1.540)	(−2.240)
Structural Unemployment	−0.038	−0.058**	−0.073**	−0.049	0.216**
	(−1.594)	(−1.988)	(−2.180)	(−1.476)	(−2.216)
Cyclical Unemployment	−0.026	−0.041**	−0.014	0.002	0.068
	(−1.516)	(−2.039)	(−0.545)	(0.090)	(1.043)
Δ Inflation	0.051**	0.031**	0.030*	−0.007	−0.107**
	(4.301)	(2.234)	(1.931)	(−0.422)	(−2.372)
R^2	0.45	0.33	0.22	0.06	0.28
Durbin-Watson	2.34	2.26	2.47	2.25	2.55
Q(10)	9.03	3.49	7.03	10.57	7.89
	(0.58)	(0.98)	(0.72)	(0.39)	(0.64)
	Structural Unemployment from the HP Filter				
Explanatory Variables	Lowest Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Highest Quintile
Constant	0.218*	0.240	0.320*	0.227	−0.987**
	(1.730)	(1.605)	(1.887)	(1.254)	(−2.030)
Structural Unemployment	−0.040*	−0.049*	−0.061*	−0.039	0.186**
	(−1.718)	(−1.785)	(−1.937)	(−1.226)	(2.042)
Cyclical Unemployment	−0.024	−0.047**	−0.017	−0.0004	0.077
	(−1.288)	(−2.138)	(−0.692)	(−0.016)	(1.077)
Δ Inflation	0.051**	0.029**	0.028*	−0.009	−0.102**
	(4.337)	(2.089)	(1.759)	(−0.522)	(−2.226)
R^2	0.45	0.32	0.20	0.04	0.27
Durbin-Watson	2.35	2.22	2.40	2.21	2.49
Q(10)	9.30	3.32	6.07	9.85	7.14
	(0.50)	(0.97)	(0.81)	(0.45)	(0.71)
	Structural Unemployment from the Kalman Filter				
Explanatory Variables	Lowest Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Highest Quintile
Constant	0.156	0.170	0.193	0.126	−0.607
	(1.660)	(1.545)	(1.507)	(0.925)	(−1.654)
Structural Unemployment	−0.029*	−0.037	−0.039*	−0.022	0.120*
	(−1.680)	(−1.639)	(−1.703)	(−0.931)	(1.765)
Cyclical Unemployment	−0.036	−0.082**	−0.027	−0.003	0.135
	(−1.214)	(−2.367)	(−0.667)	(−0.070)	(1.174)
Δ Inflation	0.049**	0.024*	0.024	−0.011	−0.087*
	(4.012)	(1.669)	(1.469)	(−0.647)	(−1.838)
R^2	0.45	0.34	0.18	0.03	0.25
Durbin-Watson	2.31	2.20	2.33	2.17	2.40
Q(10)	8.54	4.02	5.29	9.04	6.30
	(0.58)	(0.95)	(0.87)	(0.53)	(0.79)

Source: Mocan,1999: 127.

Table 2.8 Income Inequality Regression with Inflation Decomposition

Explanatory Variables	Lowest Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Highest Quintile
Structural Unemployment from Fitted Trend					
Constant	0.158	0.169	0.331*	0.313	−0.995*
	(1.042)	(0.917)	(1.662)	(1.435)	(−1.720)
Structural Unemployment	−0.030	−0.038	−0.063*	−0.053	0.188*
	(−1.054)	(−1.180)	(−1.774)	(−1.408)	(1.792)
Cyclical Unemployment	−0.018	−0.040*	−0.005	0.016	0.033
	(−0.987)	(−1.794)	(−0.196)	(0.620)	(0.472)
Δ Anticipated Inflation	0.015	0.001	−0.015	−0.007	0.017
	(−0.945)	(0.073)	(−0.709)	(−0.318)	(0.286)
Unanticipated Inflation	0.049**	0.033	0.060**	0.029	−0.178**
	(2.784)	(1.542)	(2.561)	(1.143)	(−2.625)
R^2	0.31	0.26	0.29	0.09	0.30
Durbin-Watson	2.21	2.26	2.38	2.19	2.49
Q(10)	9.88	2.30	5.37	11.00	6.55
	(0.45)	(0.99)	(0.87)	(0.36)	(0.77)
Structural Unemployment from the HP Filter					
Constant	0.175	0.126	0.239	0.218	−0.775
	(1.253)	(0.741)	(1.282)	(1.068)	(−1.436)
Structural Unemployment	−0.033	−0.031	−0.049	−0.037	0.151
	(−1.252)	(−1.050)	(−1.496)	(−1.095)	(1.606)
Cyclical Unemployment	−0.015	−0.046*	−0.009	0.013	0.042
	(−0.753)	(−1.912)	(−0.355)	(0.446)	(0.557)
Δ Anticipated Inflation	0.015	0.001	−0.016	−0.008	0.020
	(0.957)	(0.048)	(−0.794)	(−0.388)	(0.346)
Unanticipated Inflation	0.050**	0.031	0.057**	0.026	−0.171**
	(2.845)	(1.460)	(2.405)	(1.019)	(−2.502)
R^2	0.32	0.26	0.27	0.07	0.29
Durbin-Watson	2.23	2.24	2.31	2.14	2.42
Q(10)	10.27	2.16	4.49	9.97	5.67
	(0.42)	(0.99)	(0.92)	(0.44)	(0.84)
Structural Unemployment from the Kalman Filter					
Constant	0.100	0.029	0.080	0.083	−0.282
	(0.913)	(0.235)	(0.549)	(0.519)	(−0.669)
Structural Unemployment	−0.020	−0.015	−0.021	−0.014	0.068
	(−1.090)	(−0.596)	(−0.854)	(−0.559)	(0.945)
Cyclical Unemployment	−0.027	−0.105**	−0.030	0.014	0.124
	(−0.798)	(−2.698)	(−0.659)	(0.279)	(0.945)
Δ Anticipated Inflation	0.007	−0.003	−0.022	−0.007	0.041
	(0.414)	(−0.139)	(−0.972)	(−0.282)	(0.611)
Unanticipated Inflation	0.047**	0.023	0.052**	0.024	−0.153**
	(2.573)	(1.093)	(2.129)	(0.877)	(−2.166)
R^2	0.31	0.32	0.24	0.04	0.27
Durbin-Watson	2.17	2.30	2.25	2.09	2.37
Q(10)	10.05	3.68	4.09	9.48	4.64
	(0.44)	(0.96)	(0.94)	(0.49)	(0.91)

Source: Mocan, 1999: 129.

Tables 2.7 and 2.8 indicate that an increase in cyclical unemployment is associated with a reduction in the income share of the second quintile. In addition, an increase in the rate of inflation is associated with an improvement in income inequality, as it transfers income from the richest quintile to the poorest. This is supported by previous research that analysed data from the US.

In addition, Blank and Blinder (1985) deconstructed inflation into anticipated and unanticipated components. They did an experiment on the effect of these two factors on income distribution: the result supported the hypothesis that their coefficients were equal. As a result, these two components were combined into actual inflation, and the experiment proved positive and significant for the second quintile.

Further research by Blank and Blinder (1985) determined that inflation can be divided into expected and unexpected components using an ARIMA (2, 1, 0) model. The results reveals that after running the model, the deconstruction of inflation instead of actual inflation, led to a reduction in the statistical significance of the estimated coefficients. The coefficient of anticipated inflation is zero, while the coefficient of unanticipated inflation is positive for the bottom three quintiles and negative for the highest quintile. According to this, unanticipated inflation has an equalising effect on income distribution. This result is supported by Jovanovic and Ueda (1997), who concluded that, 'within a principle-agent framework where price expectations are built into contracts, surprise inflation increases the agent's (labour's) share in output and decreases the principal's (employer's) share'.

For the effect of growth on equality, a study by Barro (2000) on broad panel countries over three decades (1965–1995) showed little relation between income inequality and rates of growth and investment. He estimated the change in GINI coefficient with various independent variables, such as government consumption/GDP, democracy index, and investment/GDP (growth). The result showed no significant relation of the growth rate to a change in inequality. If a study on the effect of GINI on economic growth depended on the level of economic development (real GDP per capita), the result would suggest a negative effect of growth on inequality for the GDP per capita below $2,070, and show a positive relation for the higher rate of GDP per capita.

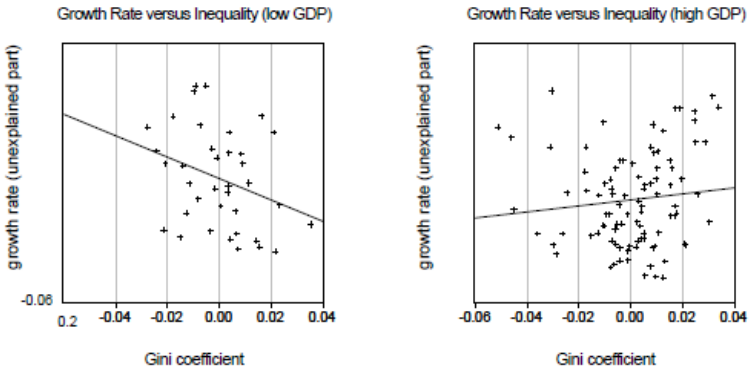


Figure 2.5 Growth Rate and Inequality

Source: Barro, 2000: 19.

Cardoso's (1992) study, revealed the effect of inflation on poverty, mainly through the impact on real wages. This is because nominal wages fall as fast as prices with rising inflation rates. In another words, wages increase more slowly compared to prices.

Burgess (2001) study on British households from 1991 to 1996 found the cycle upon the probability of poverty is a main factor in an individual's poverty. In other words, the business cycle appears to have most effect on the poverty experiences of the employed. Along with wage movements, labour supply responses affect the sensitivity of transitions into poverty.

Bourguignon (2000) characterised the elasticity of poverty with respect to the initial level of development, "The relationship between poverty and growth is that the growth-poverty relationship is not simple and the corresponding elasticity is certainly not constant across countries and across the various ways of measuring poverty". Experimental growth with the initial poverty line/mean-income ratio and the initial GINI coefficient yielded the result that levels of development and higher levels of inequality can mitigate the growth-elasticity of poverty.

Bibi and Duclos (2007) proposed a general approach that jointly integrates horizontal and vertical equity in the assessment of poverty alleviation. They used the under-coverage and the leakage ratios indices to check the horizontal and vertical equity in Tunisian households. The first index awards benefited to the poor through

foodstuff subsidies. A second scheme targeted transfers based on easily observable socio-demographic indicators. The results showed that although commodity targeting involved relatively high leakages and low vertical equity, less horizontally inequitable than socio-demographic targeting can lead to preferable policy outcomes. As a result, taking horizontal equity seriously can have important implications for the design and the understanding of poverty alleviation policies.

How should government policy determine targets to alleviate income inequality and poverty? Elbers, Fujii, Lanjouw, Ozler and Yin (2004) found the largest benefits came from targeting smaller administrative units, such as districts or villages. The results from an experiment in Ecuador, Madacasar and Cambodia have shown that the largest gains from geographic targeting occur when the overall budget transfer is modest and when the poverty line is not so high. Additionally, a potentially useful way forward is to combine fine geographical targeting based on poverty maps, with within-community targeting based on either self-selection or alternative targeting mechanisms.

This study found support in Galasso and Ravaillion's (2001) researched on Bangladesh. They mentioned that the central government only retained control over how much went to each community, delegating authority over the targeting of anti-poverty programmes to community organisations, to reduce poverty rates. The local decision-making process is efficient in the sense that it is able to capture both poor and non-poor. They have studied the targeting performance of Bangladesh's food for education programme, which used a targeting differential. The results showed the programme's transfer targeted the poor, with a higher proportion of the poor receiving help than did the non-poor. This suggested that inequality within villages was important to the relative power of the poor in local decision-making processes. They found that the more unequal villages, in terms of land distribution, were the worst at targeting the poor through the programmes. Moreover, they found that overall, most pro-poor targeting performance was due to pro-poor targeting within villages. The centre's targeting of villages contributed far less to overall performance than intra-village targeting.

Leal et al.'s (2000) study mentions that public subsidies, such as education and health care, rest on two objectives: efficiency and equity. They studied the benefit incidence of health spending in seven African countries, including data information on household responses to illness and injury. The results show that firstly, curative wealth in Africa was not well targeted to the poorest people. The share of subsidies to the poorest quintile was significantly less than to the richest 20 per cent. Secondly, health spending was progressive. This suggested that if the government gave all households an income transfer, rather than a health subsidy, income distribution would improve, other things remaining constant. In addition, the allocation of spending across services was not targeted at the poor. Governments allocated significant shares of their health budgets to hospital services, which were not used by the poor. This is to say that targeting health spending to the poor in Africa would require investing less on hospitals and more on primary services, similar to studies in developing countries. This effect ensures it is necessary to understand why poor people limit their use of health facilities.

Leal et al. (2000) suggested that poor households were often some distance from government health facilities and typically faced long journeys and high opportunity costs to obtain health care. For example, in South Africa, those in the poorest group travel almost two hours to reach medical attention. Lavy and Germain (1995) found that the poor were willing to pay less than the rich in absolute terms, but more relative to their income to reduce travel distances. Gertler and Van der Gaag (1990) also found that the poorest people were far more sensitive to changes in the time required to obtain health care than the richer.

According to this, Leal et al (2000) concluded that in the long term, a strategy should encourage private providers so that public subsidies were re-directed to poorer communities. They should also promote public health awareness campaigns targeted at poor areas to create awareness. Finally, the reallocation of public expenditure must be based on a sound understanding of the factors that affect a household's decisions about health care, which finally leads to better results.

Park, Wang and Wu (2001) mentioned that high poverty in certain geographical regions in many countries might be because labour and other factors

were not fully mobile. They noted that particular regions should receive the focus. Janlan and Ravallion (2002) study supported these findings. They found evidence of geographical poverty traps in China and concluded they were mainly caused by the marginal product of capital decreases in own capital, but increases in geographic capital. In China, governments have implemented targeting programmes through public spending rather than direct consumption subsidies. However, to be effective, such programmes must demonstrate success in effectively targeting poor areas and improving the well-being of households.

Janlan and Ravallion (2002) did study regional poverty targeting in China during four periods: 1981 to 1985; 1985 to 1989; 1989 to 1992; and 1992 to 1995, using the model below:

$$y_{it} = \beta_{1d} P_{it-\tau} + (1+\beta_2) y_{it-\tau} + \beta_3 x_{it-\tau} + \gamma_i + \sum_P \lambda_{pt} + e_{it}$$

Where:

1) y_{it}: The log of county i's rural income per capita (Y)

2) Pit-τ: Function of the county's status as a designated poor county made at the beginning of the period

The results are shown in Table 2.9 below.

Table 2.9 China Poverty Program Effect

	1 3SLS Differences	2 SUR Differences	3 3SLS	4 3SLS Differences
Poor county (1986-92)	0.0228	0.0180	-0.0178	0.0236
	(0.00298)	(0.00299)	0.00371)	(0.00391)
Poor county (1993-95)	0.00906	0.00767	-0.00598	0.00951
	(0.00353)	(0.00350)	0.00388)	(0.00479)
Log(income per capita) (t-τ)	-0.236	-0.310	-0.288	-0.230
	(0.00475)	(0.00302)	0.00632)	(0.00628)
Log(grain output per capita) (t-τ)	-0.0176	-0.0120	-0.00594	-0.0168
	(0.00261)	(0.00261)	0.00287)	(0.00356)
Industrial share of income (t-τ)			0.0717	
			(0.0120)	
Minority dummy			-0.0401	
			(0.0106)	
Revolutionary base dummy			-0.0198	
			(0.00726)	
Average income in other				0.0118
counties in prefecture(t-τ)				0.00445
Percent of other counties in pref.				0.00275
designated poor (1986-92)				0.00574
Percent of other counties in pref.				0.000303
designated poor (1993-95)				0.00621
Province-time controls				Y
Prefecture-time controls	Y	Y	Y	
Number of equations	3	3	3	3
N	1676	1676	1637	1676

Source: Park et al.,2001: 36.

The results show that by using 3SLS, the poverty programme increased rural income growth by 2.28 per cent during 1985–1992, and approximately 0.91percent during 1992–1995 (column one). For column two, without instrumenting effects, the effects were somewhat smaller (1.80 percent and 0.77 percent) compared to the first column. If considering column three, without FEs, the effect of the poverty programme was negative in both periods; however, it was not significant during 1992–1995. One explanation for the different results is that any geographical areas with unobservable wasting to growth were likely to be designated a poor location.

For the whole country of China, the correlation of funds allocation to income level was not significantly correlated. Only development capital funds were clearly progressive with respect to income per capita; while subsidised loan and food for work were insignificantly negative on income per capita if excluding provincial dummies and insignificantly positive if including provincial dummies. This might be because a lack of information regarding what extent gains benefited the poor. In addition, the estimate of the return rate was subject to error because the true amount

of investment in poor areas is unsure. Finally, the assessments of specific poverty programmes was criticised and merit attention.

In summary, the Chinese experience confirms the view that regional targeting may be a 'blunt investment'. "Political constraints are likely to undermine regionally targeted programs when the level of targeting is at the county level or higher" (Park, et al., 2001).

Bigman, Dercon, Guillaume and Lambotte (1999) studied community targeting for poverty reduction in Burkina Faso. In many developing countries, targeting programmes based on geographical areas or large populations are high cost and ineffective. For example, in countries where the poor are concentrated in certain areas, geographical targeting programmes concentrate giving benefits to the non-poor living in the target areas and fail to support the poor in that particular area.

Baker and Grosh (1994) studied geographical targeting in Venezuela, Mexico and Jamaica. They concluded that targeted programmes could effectively transfer benefits, but only with a given budget's constraints. Additionally, the greatest reduction in poverty occurred when the target area is by village.

Narrowing the target area can minimise the leakage of benefits to the non-poor, where the socio-economic level and standard of living of the majority population in the target area is similar. Consequently, the income inequality of people in the country is due to income differences between villages, and only to a smaller degree from the income differences of people within the same village.

However, narrowing to the household level is information-intensive. According to this, they conducted another approach to identify the more general characteristics of the poor and determine a set of indicators, using standard household income and expenditure surveys. These indicators include the number of children and place of residence.

Bigman et al. (1999) presented a methodology by establishing the criteria for targeting poverty reduction programmes at different levels, such as villages and urban communities. The explanatory variables include distance from the urban centre to public facilities and quality of the access road: these variables predict the incidence of poverty. The results show that tight budget constraints are likely to reduce the need

for complete ordering; poverty alleviation programmes are likely to focus on poor villages.

In their study on Chile by Clert and Wodon (2001), many social programmes are targeted using ficha. A particular household is scored not only by income transfer but also for water subsidies, access to social housing and to child care centres. This paper assessed the ficha using both qualitative and quantitative methods. Interestingly, the quantitative measurement was based on a deconstruction of GINI income elasticity of the various programmes, to check who benefited and who did not. This was called 'error of inclusion and exclusion'. The error of inclusion occurred when a household which should not have received the benefit from a targeting programme, but finally got the benefit. Likewise, the error of exclusion was observed when a poor household that should receive the benefit of a program but finally could not.

The model below is used to explore the effect from various programmes on deconstructing GINI income elasticity, and to check who benefits and who does not:

$$\eta = \frac{\mathrm{cov}(x, F(y))}{\mathrm{cov}(y, F(y))} \frac{\bar{y}}{\bar{x}}$$

Where:

1) η: GINI income elasticity (GIE)

This can be interpreted as: if the elasticity equals one, it implies that a marginal increase in benefits will not affect the GINI coefficient in after-tax after-benefit income. If elasticity is less (greater) than one then increases in benefit will decrease (increase) the GINI. As a result, the smaller the elasticity, the larger the redistributive effect of the programme and the gains in benefit. The result can be seen in Table 2.10.

Table 2.10 GIE of Targeting Programme in Chile

	Income transfer programs and water subsidies			
	Non-PASIS pensions not targeted)	Pension assistance PASIS	Family allowances SUF	Water subsidies
Gini income elasticity (GIE)	0.91	-0.58	-1.03	-0.35
Program participation rate p	15.7%	6.1%	11.5%	6.4%
Mean allocation received	7634.04	503.16	155.68	47.61
Overall Gini for per capita income G_y	0.57	0.57	0.57	0.57
Targeting elasticity				
Lower bound	-1.49	-1.66	-1.56	-1.65
Actual value	0.47	-0.56	-0.95	-0.43
Upper bound	1.49	1.66	1.56	1.65
Allocation elasticity				
Lower bound	-1.19	-1.06	-1.13	-1.07
Actual value	1.91	1.05	1.09	0.80
Upper bound	1.19	1.06	1.13	1.07
	Other targeted programs			
	Housing Viv. Basica	Housing Viv. Prog I	Housing Viv. Prog II	Child care JUNJI	Child care INTEGRA
Gini income elasticity	NA	NA	NA	NA	NA
Program participation rate p	5.8%	1.1%	0.2%	1.7%	1.3%
Overall Gini for per capita income G_y	0.57	0.57	0.57	0.57	0.57
Targeting elasticity					
Lower bound	-1.66	-1.74	-1.76	-1.73	-1.74
Actual value at individual (per capita) level	-0.41	-0.68	-0.59	-0.50	-0.71
Actual value at household level	-0.32	-0.54	-0.48	-0.44	-0.65
Upper bound	1.66	1.74	1.76	1.73	1.74

Source: Authors' estimation using 1998 CASEN survey.

Source: Clert and Woden , 2001: 147.

With these results, there is a high overall redistributive effect, but still differences between the various programmes. All programmes targeted according to the ficha CAS have a large redistributive effect per unit spent. This can be seen from the low values of the GIE for income transfers and water subsidies, and also by the low values of the targeting elasticity for the housing and child care programmes.

Some programmes are better targeted than others. For example, with income and other transfers, the allowances for Subsidio Unico Familia (SUF) has the best performance, whereas water subsidies show a lower performance. In addition, comparing child care and housing programmes, the former tend to be slightly better targeted than the latter.

Another result shown in this table is good targeting; with the base of the ficha CAS, the redistributive effect of programmes is mainly from good targeting. This is supported by the fact that the GIE is usually close to targeting elasticity. This suggests there are a few different households that received different amounts of benefit. Overall, the program was well targeted.

However, there are also some arguments that poor households often lack information about the government programmes and how to apply benefits. In addition, there are potential deficiencies and biases in the eligibility criteria and associated targeting methods based on ficha. Further, the lack of information might result from social workers; they cannot provide services to the poor. There are some cases in which assistance is needed, but is not offered because it is not in the ficha system. Consequently, to improve the social transfer, it may be useful to implement a more effective communication strategy, since the poor lack information. More contact should also be encouraged between the poor and social workers.

Bibi and Duclos (2007) also focused on the effectiveness of equity, similar to Clert and Wodon (2001). They separated the effectiveness on two types of errors: Type I errors from 'false negatives' or exclusion errors (Clert and Wodon, 2001), that is, when the transfer does not flow to eligible or poor families; and Type II errors from 'false positives' or inclusion errors (Clert and Wodon 2001), which occur when benefits wrongly flow to the non-poor or the non-eligible. There is usually an argument that inclusion errors reduce the vertical efficiency of any targeting programmes: this is because it is a mistake to distinguish between the poor and the non-poor. Also, the exclusion error leads to horizontal inefficiency because this error discriminates among the poor. According to this, in any studies of targeting efficiency, focus should be placed on these three indicators:

1) The rate of leakage that can capture how much of a programme's resources are 'wasted' on the non-poor.

2) The measurement of a programme's vertical equity. This requires a search for a reduction in the welfare gaps that separate unequal individuals.

3) The measurement of a programme's horizontal equity. When equals are treated non-equally, horizontal inequity exists.

Elbers et al., (2004) also support the benefit of targeting smaller areas, and trying to minimise the problem of information access. They tried to find a useful way to combine fine geographic targeting using a poverty map. The new programme explicitly estimated consumption or income-based welfare outcomes at the local level, which involved imputing consumption or income at the unit-record level into the population census. The paper tested to what extent the high degree of disaggregation offered by poverty maps could help to improve targeting schemes and alleviate poverty. They studied Ecuador, Madagascar and Cambodia, and found that there were potentially large gains in targeting performance to the local level. The benefits became increasingly evident as one made use of more and more disaggregated data on poverty. From these three countries, relative to a uniform transfer, the same effect on poverty could be achieved at considerably lower costs when targeting was based on the highly disaggregated data shown in the poverty map.

It is important to emphasise that Elbers et al., (2004) assumed the willingness of governments to consider geographic targeting as implying a willingness to sacrifice horizontal equality to improve targeting. Budgets for distribution were assumed to be exogenous. However, this paper did not address the real issue: that the costs of administering a given transfer scheme might increase with the degree of disaggregation. The availability of transfers might have induced behavioural responses. For example, some households may move to locations where a transfer was announced. Finally, it was not clear how a government transfer to a community would actually be distributed among the poor.

Kanbur and Paul (2007b) studied the paradoxical results of targeting programmes. For example, when targeting is transferred to a richer community via the increased provision of public goods, if in this case, the poor can receive the benefits.

2.2 Theoretical Implications

2.2.1 Perspectives regarding economic inequality

Marxism believes that distribution should be based on an individual's needs rather than the ability to produce. With this system, inequality would be minimal. Marxists believe economic equality is necessary for democracy. This means that when there is economic inequality, then political equality will not exist. The means of production are owned in common and non-labour income is eliminated. Marxists believe that once the means of production are owned in common, and work is done for utility rather than profit, then all workers have freedom in a democratic workplace: as a result, economic equality will be achieved.

Meritocracy believes in a society where an individual's success is a function of their merit, or contribution. Economic inequality would result from the wide range of individual skill, talent and effort in human populations, and should not be considered according to ethics or rights.

Liberalism, most modern social liberals believe that the capitalist economic system should be maintained, but that the status quo, related to the income gap, must be reformed. Most social liberals refer to the capitalist system, Keynesian economics, neoliberalism, and progressive taxation. However, classical liberals and libertarians do not seriously examine wealth inequality, but rather believe in equality under the law, regardless of whether it leads to unequal wealth distribution.

Robert Nozick argued that governments redistribute wealth by force through taxation. The ideal is the moral society in which all individuals are free from force. However, Nozick recognised that some amount of redistribution was justified, to compensate for the force of taking of property and not because of inequalities. John Rawls noted in A Theory of Justice that equalities of wealth distribution are only reached when society is improved as a whole, including the poorest members.

2.2.2 The evolution of inequality

A main theory of inequality has been proposed by Kuznets (1995) and developed further by Robinson (1976). This focused on the movement of persons from the agricultural sector to the industrial sector. According to this concept, agriculture has a low per capita income and low inequality. In contrast, industry has a high per capita income and high inequality. Economic development related to the movement of individuals and resources from agriculture to industry, the individual who moves could enjoy a rise in per capita income, and this led to high inequality in the economy overall. However, as the agricultural sector is smaller in size, the effect on inequality from more urbanisation was that the poor are able to join the richer industrial sector. As a result, at later stages, the relation between per capita product and the inequality diminished.

The relationship between inequality indicators, such as GINI, and the level of per capita product can be shown by the inverted-U shape: Kuznets curve. Inequality is higher in the early stages and lower later as a development in economy.

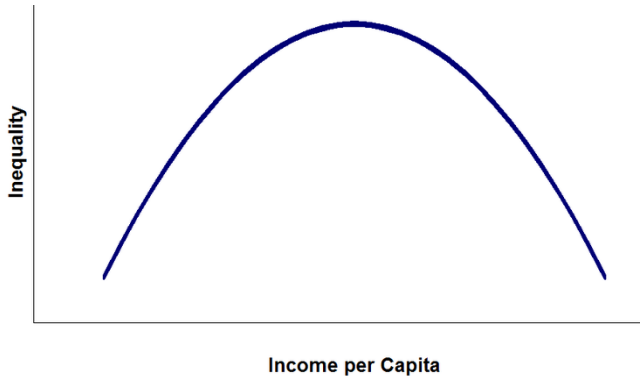


Figure 2.6 Kuznets Curve

Movement from rural to urban areas can imply a shift from a financially unsophisticated environment to more modernised financial system.

Another study suggested that the poor sector may use old technology; while the richer sector employs more advanced techniques. Many technological innovations increase inequality. Subsequently, as more people take advantage of technology,

inequality tends to fall. Inequality could depend on how long a new technology was introduced to the economy overall. The Kuznets curve would fit only to a high per capita GDP if there was a signal that the country had introduced a new technology.

2.2.2.1 GINI Coefficient

The GINI coefficient is an index of inequality. This is a ratio of the areas on the Lorenz curve diagram. In Figure 2.7 below, it is the area between the line of perfect equality (45 degrees) and the Lorenz curve.

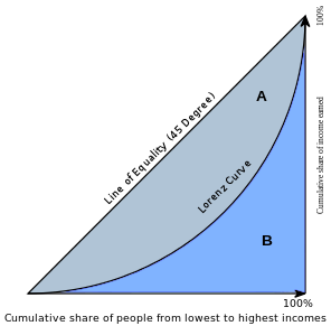


Figure 2.7 The GINI Coefficient

If the area between the line of perfect equality and the Lorenz curve is *A*, and the area under the Lorenz curve is *B*, then the GINI index is *A* / (*A* + *B*). If the Lorenz curve is represented by the function *Y* = *L* (*X*), the value of *B* can be found with integration and:

$$B = \int_0^1 L(X)dX.$$

If all people have positive incomes, the GINI coefficient can be from 0 to 1. In practice, both extreme values are not quite reached. The GINI coefficient could theoretically be more than 1, in the case of negative wealth (people with debts). Normally, the mean is assumed positive, which makes a GINI coefficient more than zero.

A low GINI coefficient shows a more equal distribution, with '0' indicating complete equality, while higher GINI coefficients indicate more unequal distribution, with '1' corresponding to complete inequality. In the case of complete inequality, this

means the most unequal society. Complete inequality can be explained as one in which a single person receives 100 per cent of the total income, with the remaining people receiving none:

$$(G = 1-1/N)$$

The same interpretation can show that the most equal society will be one in which every person receives the same income ($G = 0$).

Barro (2000) analysed the best measurement for income inequality; most research uses the GINI coefficient to represent inequality. He tested the experiment in broad countries during 1960 to 1990, by separating groups according to each income quintile. In each quintile, people had the same income; from the observations, the GINI coefficient was represented as:

$$\text{Gini coefficient} = 0.8*(-1 + 2Q5 + 1.5Q4 + Q3 + 0.5Q2) =$$

$$0.8*(1\ \ -2Q1 - 1.5Q2 - Q3 - 0.5Q4)$$

Where:

1) Q_i is the share of income in each quintile, with group 1 the poorest and group 5 the richest.

The first equation shows that the GINI coefficient gives positive weight to each of the quintile shares from 2 to 5, where the largest weight (2) applies to the fifth quintile and the smallest weight (0.5) applies to the second quintile. The second equation noted the GINI coefficient as negative weights to quintile shares from 1 to 4, where the largest negative weight (2) applies to the first quintile and the smallest weight (0.5) applies to the fourth quintile.

The results show that the GINI coefficient is very highly correlated with the upper quintile share, and not as highly correlated with other quintile shares. The correlations of the GINI coefficients with Q5 are: 0.89 for 1960; 0.92 for 1970; 0.95 for 1980; and 0.98 for 1990. However, for Q1 it shows smaller magnitudes, which are: –0.76 in 1960; -0.85 in 1970; -0.83 in 1980; and –0.91 in 1990. According to these patterns, the results that use GINI coefficients turn out similar to those using Q5, but not so similar to those using Q1 or other quintile measures

2.3 Poverty and Equity

Consider a vector y of living standards below:

$$\mathbf{y}=(y_1, y_2, \ldots y_N; n_1, n_2, \ldots, n_N)$$

Here, the poverty line is denoted as 'z'. A model that can define the poverty gaps for an individual at 'y_h' is:

$$g_h(z) = \max(z - y_h, 0)$$

Where:

1) g(z) is the vector of poverty gaps

Class of FGT (Foster et al., 1984) is an important subset of these poverty measurements, which are defined as:

$$P_\alpha(\mathbf{g}(z)) = n^{-1} \sum_{h=1}^{N} n_h g_h(z)^\alpha$$

Where:

1) α is considered as an indicator of aversion to inequality among the poor

The greater loss of weight of income to the poorest, than to the not so poor, is represented by a larger α. When α becomes very large, Pα (g(z)) approaches a Rawlsian measure, which depends only on the poorest individual's income.

These models above are non-increasing, symmetric or anonymous in each individual income.

Pα (g(z)) is also able to provide the headcount ratio. In addition, P1(g(z)) yields the average poverty gap, which is not sensitive to the distribution of well-being among the poor. In the case that α > 1, the Pα (g(z)) are strictly convex in each individual income, which ensures an equalising transfer of income from a poor person to anyone who is poorer. According to this, the decreases in Pα (g(z)) make these indices' distribution more sensitive.

2.4 Role of Tax and Social Spending

Income distribution has many aspects. The distribution of market incomes is an important aspect of income distribution. The distribution of disposable incomes is another. One could also look at the distribution of disposable incomes, together with government in-kind transfers, such as education and health services.

Many factors affect the distributions of market and disposable incomes. These factors include the distribution of physical, financial and human capital. Taxes and transfers affect the differences between market and disposable incomes not only in the short term, but they can also affect the distribution of market incomes over time. Some taxes can affect individuals' work efforts. Excessively high tax rates can drive economic activities out of formal sectors or out of countries.

Government social spending policies have distribution implications on disposable income, not only because social spending can offer immediately benefits (e.g., health and education services), but they also affect the distribution of earning capacities of individuals and households and thus help shape the distribution of market incomes over time.

Education, in the long run, public primary and secondary education are programmes have been most consistently shown to increase labour supply, so they are available in all developed and developing countries. One might expect job training programmes to have similar effects, since they are specifically aimed at improving employment and earnings. However, much literature evaluating job training programmes typically finds only modest gains in either labour supply or earnings. Lalonde and Chandler (1995) argues this is because "we get what we pay for": That is, given what we know about the size of returns to education, most training programmes are too short and too superficial to reasonably expect them to have much effect.

Health, the literature on health and labour supply has been examined in Currie and Madrian (1999). The literature suggests the significant effects of extending public health insurance to uncovered groups of infants and children have significantly improved their health. It is likely that these children will grow into healthier adults,

and there is growing evidence that improvements in health have intergenerational effects. There is also evidence that non-covered adults are less likely to get medical care, including necessary preventive care; this could have negative effects on their future health status, which will impact on labour supply.

A US example was linked to the Medicaid programme. Welfare mothers whose incomes were above the cut-off rate would lose both their welfare benefits and health insurance. Yelowitz (1995) mentioned that when this relationship between welfare and insurance was relaxed, or when the children of low income women remained insured, labour supply increased in this group and had a positive effect on income distribution.

However, in a situation where private health insurance benefits were tied to employment, increases in public health insurance also reduced the labour supply and led to negative effects on income distribution. This is due to reducing the level of relationship between labour and insurance, or less dependence on employment as a means of securing health insurance.

2.5 Theory of poverty

Poverty caused by individual deficiencies, this theory of poverty consists of many explanations that focus on the individual as responsible for his or her poverty situation. Generally, politically conservative theoreticians blame individuals in poverty for creating their own problems, and argue that with harder work and better choices, the poor could have avoided their problems. However, alternative theories state that poverty can result from the lack of possibly genetic qualities, such as intelligence, that are not so easily reversed.

Neoclassical economics emphasise individualistic sources of poverty. The core premise of the neoclassical dominant paradigm for the conditions leading to poverty is that they assume individuals have perfect information: individuals will seek to maximise their own wellbeing by making (the right) choices and investments. For example, by foregoing university education or other training that will lead to better paying jobs in the future, people choose short term and low pay-off returns.

Neoclassical economic theory holds the individual largely responsible for their individual choices.

Poverty caused by cultural belief systems that support subcultures of poverty, this theory suggests that individuals are not necessarily to blame for their poverty, because poverty is created by the transmission over generations of a set of beliefs, values and skills that are socially generated but individually held. This theory states that the poor are victims of their dysfunctional subculture or culture.

Poverty caused by economic, political, and social distortions or discrimination, according to these theories, poverty occurs because the economic system is structured in such a way that poor people fall behind, regardless of how competent they may be. For example, minimum wages do not allow single mothers or their families to be economically self-sufficient (Jenks, 1996). There is also the problem of the structural barriers, which prevent the poor (low skilled workers) from entering the labour market and from getting better jobs. Interestingly, research is showing that the availability of jobs to low income people is about the same as it has always been, but that the wages workers can expect from these jobs have fallen. In addition, fringe benefits, including health care and promotions have become scarce for low skilled workers.

In many countries, there is an effort to eliminate structural barriers to give the poor access to better jobs through education and training; this generates substantial successes theoretically, but also perceived failures. For example, despite a perceived importance of education, funding per student in less advantaged areas lags behind spending on richer students. Teachers are less adequately trained, books are often out of date or in limited supply, and amenities are few. This systemic failure of schools is thus thought to be one reason that poor people experience low achievement, poor rates of graduation, with few pursuing higher education (Chubb and Moe, 1990).

Poverty caused by geographical disparities, rural poverty represents a spatial characteristic of poverty that exists separate from other theories. This regional theory calls attention to the fact that people, institutions, and cultures in certain geographic areas do lack the opportunity to receive the objective resources needed to generate well-being and income, and that they lack the power to claim redistribution and

government budget. As Shaw (1996) points out, ‘Space is not a backdrop for capitalism, but rather is restructured by it and contributes to the system’s survival. The geography of poverty is a spatial expression of the capitalist system’.

2.5.1 Poverty indicators

The poverty threshold, or poverty line, is the minimum level of income deemed adequate in a given country: in practice, the poverty line is significantly higher in developed countries than in developing countries. The common international poverty line has in the past been roughly $1 a day. In 2008, the World Bank released a revised figure of $1.25, at 2005 purchasing power parity (PPP).

Absolute poverty is a level of poverty defined in terms of the minimal requirements necessary to afford minimal standards of food, clothing, healthcare and shelter. For the measure to be absolute, the line must be the same in different countries, cultures, and technological levels. Such an absolute measure should look only at the individual’s power to consume and it should be independent of any changes in income distribution.

The advantage of using absolute poverty as a poverty indicator is its ability to apply the same standards across different locations and times. On the other hand, it suffers from the disadvantage that any absolute poverty threshold is to some extent arbitrary; the amount of wealth required for survival is not the same in all places and times.

Relative poverty is the measurement of ‘poverty’ below some relative poverty threshold. For example, the statement that “those individuals who are employed and whose household equalised disposable income is below 60% of national median equalised income are poor” uses a relative measure to define poverty. By using this definition, if everyone’s real income in an economy increased, but the income distribution stayed the same, then the rate of relative poverty would also stay the same.

The headcount index is the measurement of the proportion of the population counted as poor, often denoted by P_0. The formula to calculate it is:

$$P_0 = \frac{N_p}{N}$$

The greatest virtues of the headcount index are that it is simple to construct and easy to understand.

However, the measure has at least three weaknesses: First, the headcount index does not take the intensity of poverty into account. Second, the headcount index does not mention how poor the poor are; as a result, it does not change if people below the poverty line become poorer. Third, the poverty estimates should be calculated for individuals and not households.

The poverty gap index measures which individuals on average fall below the poverty line, and expresses this as a percentage of the poverty line. The calculation method is defines the poverty gap (*Gi*), using the poverty line (*z*), then less actual income (*yi*) for poor individuals. According to this explanation, the formula of this index is:

$$G_i = (z - y_i).I(y_i < z).$$

It may also be written as:

$$P_1 = \frac{1}{N}\sum_{i=1}^{N}\frac{G_i}{z}.$$

2.6 Redistributive policy

The government redistributes social welfare from different group for equality purpose. This happened when the government provides benefits to people by social programs.

“One premise of redistribution is that money should be distributed to benefit the poorer members of society, and that the rich have an obligation to assist the poor, thus creating a more financially egalitarian society” Mayank Singhal, (2011)

2.7 Median voter theroem

The median voter theorem holds that as income distributions are skewed to the right, the preferred amount of redistribution is a function of the relative position of the median voter on the income scale. “The greater the distance between the median voter’s income and society’s average income, the greater is society’s preferred amount of redistribution. The preferred amount of redistribution should be that which brings the median income in line with the average income.” Oren M. Levin-Waldman, Ph.D (2014)

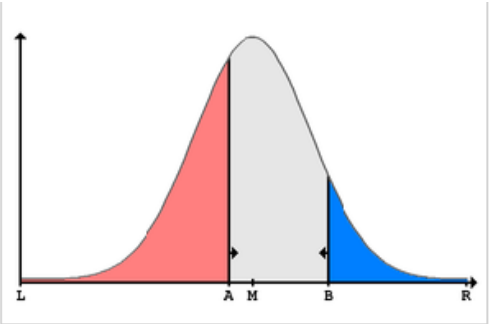


Figure 2.8 Median Voter Theorem

2.8 The Principle of Targeting Programmes

In the concept of poverty alleviation policies, the objective is to identify who is poor and then target benefits to those people. However, this ideal solution is unrealisable because of three factors (Besley & Kanbur 1990):

1) The cost of administration and data collection
2) Individual responses and incentive effects
3) Considerations of political economy.

2.8.1 Types of targeting

2.8.1.1 Statistical targeting

The programmes target key indicators, such as region and occupation. Under this scheme, all people in a region are treated identically. Household income and expenditure surveys can be used to evaluate the poverty characteristics of each region.

If the number of indicators is limited, then every unit or household is separately identified. There are three important factors consider:

1) The appropriate levels of benefit

2) Where the division should be made between different groups, such as targeting according to location

3) How many groups should there be?

Ravallion and Chao (1989) have shown how the benefits of regional targeting can be measured. The results revealed the poverty level achievable with the optimal use of regional poverty information. As a result, the gain from targeting was then defined as the different amount between untargeted budgets and targeted budgets, to achieve the target poverty level 'equivalent gain from targeting'.

However, there are some problems. There is a case where individuals are allowed to change the targeting categories, for example, the relocation of families to a targeted location. The study from Roberts (1984) provides a general recommendation that policy makers should take this into account: individuals can take the advantage by manipulating the use of non-income indicators.

In conclusion, regional targeting would appear to have a great deal of potential

in some places, where the spatial distribution of poverty is quite uneven. In addition, locational decisions are political, which means that poor areas have limited political influence. Furthermore, targeting to poor areas with notoriously incompetent administrations might well result in programmes that serve fewer people per unit of investment than activity to richer areas.

2.8.1.2 Self-targeting

These programmes focus the poor, or a focus group, which involves agents making non-monetary payments for income transfer, or receiving in-kind, rather than cash support.

In addition, Korpi and Palme (1998) examined the different types of social policies in capitalist countries to evaluate the effectiveness in terms of reducing inequality and poverty. They propose below programmes to alleviate the poor:

1) The targeted model, which is based on a means test and focuses on those with income falling below the poverty line.

2) The voluntary state-subsidised model, uses tax money to help mutual-benefit societies and provides insurance to protect members from loss of earnings.

3) The corporatist model, is a compulsory programme in which members will be given the right to claim benefits when their earnings are interrupted according to their occupational categories.

4) The basic security model, the eligibility to claim benefit is based on contributions or on the citizenship.

5) The encompassing model, with eligibility based on contributions and citizenship. The programme covers all people and provides basic security for the economically active person. This programme can effectively minimise the demand for private insurance, and has the potential of encompassing all citizens within the same programme.

6) In an ideal world, the encompassing model is expected to be the best programme to redistribute budgets in the encompassing countries, followed by the corporatist, basic security and targeted categories.

CHAPTER 3

HYPOTHESIS, MODEL AND METHODOLOGY

3.1 Hypothesis

At the provincial level, government expenditure from each interested ministry to alleviate poverty are effective and pro-poor. Regarding expenditure, government allocation can also alleviate inequality in some extent. Considering special programmes and policies from some ministries which main purpose is to minimize inequality and poverty, these programmes are effective and meet the objective.

3.2 Model

This paper will use the following general equation to evaluate the effect of government expenditure to interested social indicators:

$$\left(Y_1, Y_2\right) = F\ (G1t, G2t,..G12t\ Xit)$$

Or:

$$Y_{it} = \beta X_{it} + \alpha G_{it} + \mu$$

Where:

1) Y = social indicator reflected the social public spending and other socio-economic indicators.

Y_1 = Inequality

$$GINI = \Sigma_{i=1}^{n} \Sigma_{j=1}^{n} \frac{\left| R_i - R_j \right|}{2n^2 \overline{R}}$$

Y2 = Poverty ratio; calculated from the total poverty population whose expenditure lower than poverty line divided by total population in that particular provinces multiple by 100.

2) G_{it} = Per capita budget allocation:

G_{1t} = budget allocation from Ministry of Education/total number of students

G_{2t} = budget allocation from Ministry of Health plus Health insurance programme/total population

G_{3t} = budget allocation from Ministry of Social development and Human security/ total population

G_{4t} = budget allocation from Ministry of Office of Prime minister/total population

G_{5t} = budget allocation from Ministry of Agriculture and corporative/total population

G_{6t} = budget allocation from Ministry of Transportation/total population

G_{7t} = budget allocation from Ministry of Commerce/total population

G_{8t} = budget allocation from Ministry of Interior/total population

G_{9t} = budget allocation from Ministry of Industry/total population

G_{10t} = budget allocation from provincial local fund/total population

3) X_{it} = Other variables such as GPP (from manufacturing sector and agriculture sector), Unemployment and Inflation.

The specifications of the equation are based on the recognition that, in view of the characteristics of the data, the explanatory variables included in the equation would affect the distribution of the GINI coefficient and poverty ratio. The objective of this testing is to check the distributional implications of the nature of each government expenditure on income distribution and poverty. Theoretically, an increase in each government budgets is the critical means of improving the distribution of human capital and earning capacity (lower poverty and increasing the equality)

3.3 Methodology

The hypothesis to be checked is that at the provincial level, government budget allocation from each interested ministry can alleviate income inequality and poverty. (Study timeframe 2006–2011).

This will be done by:

An experiment that collects independent variables from each province, which are:

1) From the Bureau of Budget database, the data of how each ministry allocates the budget to each province. These data will be the independent variables upon which to check the effect of the GINI coefficient and poverty in each province.

2) From the National Economics and Social Development Board, the data of per capita gross provincial product and unemployment rates.

3) From the National Statistics Organization, CPI data.

Doing calculations on and collection of dependent variables, which are:

(1) From the SES database, the total income per capita per household to calculate the GINI coefficient.

(2) From the National Economics and Social Development Board, the poverty ratio by each province and year.

This model checks the effect on inequality:

$$GINI = \beta X_{it} + \alpha G_{it} + \mu$$

The model to check the effect on the poverty ratio is:

$$PR = \beta X_{it} + \alpha G_{it} + \mu$$

Where:

1) GINI = GINI coefficient per each province, year
2) PR = poverty ratio calculated from number of poor people who have the income less than poverty line divided by the total population
3) X = Other variables that impact GINI such as inflation (CPI per each provinces), unemployment rate and GPP
4) G_{it} = Per capita from each interested ministry budget allocation
5) qlifecap = EDUCAP + HEALTHCAP+ SOCIALCAP + PMCAP + +AGRICAP+TRANSCAP+COMCAP+INTCAP+INDCAP+LOCALCAP

3.3.1 Unit root test: Levin-Lin-Chu UNIT ROOT

Before estimating the regression, the variables need to be tested for validity and reliability before further analysis. This paper applies the unit root test, which is a test to detect whether or not there is a non-stationery variable. Stationary is a situation when the joint probability distribution does not change when shifted in time or space. Consequently, parameters such as the mean and variance, if they exist, also do not change over time or space. Accordingly, this paper will conduct the Levin-Lin-Chu unit root test to examine the characteristics of observed data, whether that data is stationery or not.

The structure is:

$$\Delta y_{it} = \rho_i y_{i,t-1} + \sum_{l=1}^{p_i} \phi_{i,l} \Delta y_{i,t-l} + \alpha_i d_{it} + \varepsilon_{it}$$

From the model above, Levin, Lin and Chu (2002) proposed a test with the hypothesis that ρ is identical, because ρ is fixed across i.

As a result of Levin-Lin-Chu's model, this paper will test the assumption that under the H0: null hypothesis, ρ is UNIT root; or where ρ has been estimated or non-stationary. In the opposite way, will reject H0 if ρ is stationary.

3.3.2 Heteroskedasticity

OLS makes the assumption that the variance of the error term is constant (homoscedasticity), as below:

$$V(\varepsilon_j) = \sigma^2$$

However, if the error terms do not have constant variance, they are said to be heteroscedastic.

Heteroscedasticity does not result in biased parameter estimates. However, OLS results are no longer the best linear unbiased estimators (BLUE) of all the unbiased estimators, OLS does not provide an estimate with the smallest variance might causes too high or too low. This paper needs to test heteroskedasticity: under this scenario, OLS is unbiased but inefficient. By preventing this problem, a robust standard error command will be in place.

3.3.3 Panel data

This paper has applied panel data to analyse the effects of independent variables. Panel data is a dataset in which the behaviour of entities is observed across time. This econometrics method allows researchers to control for unobservable variables or variables that change over time but not across entities.

3.3.4 OLS, Fixed effects or Random effects model

This study has applied regression with the testing of which method to be used in the analysis, Fixed effect or Random effect.

Fixed effects will be used to explore the relationship between independent variables within entities (provinces). Each entity has its own individual characteristics that might or might not affect dependent variables (GINI and poverty ratio).

Random effects will be based on the rationale behind that the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables in the model. If the different across entities can affect the independent variables, then should apply random effect.

Breusch and Pagan LM test for random effects, this study has applied Lagranigan multiplier (LM) testing to decide between a random effects regression and a simple OLS regression. Setting the null hypothesis that variance across entities (provinces) is zero (preferred model is normal OLS regression); there is no significant difference across units (i.e., no panel effect). As a result, this study will reject the null hypothesis if testing result shows that:

Prob >Chi2 <0.05

For this study, OLS is not applicable for the empirical study.

Hausman test, this study has applied the Hausman test to decide between fixed or random effects, setting the null hypothesis with the preferred model as random effects and the alternative fixed effects. This test basically determines whether the unique errors (ui) are correlated with the independent variables; the null hypothesis is that they are not. As a result, this study will reject the null hypothesis if testing result shown that:

prob > Chi2 <0.05.

3.3.5 Endogeneity

$$y = \beta' x + u$$
$$\uparrow q$$

From the basic regression above, q contains 'unobserved heterogeneity' that seems to be correlated with both x and y (e.g., omitted variables, selection bias, reverse causality) $cov\,(x, u\,(q)) \neq 0$.

This paper uses the same individuals across more than one period, so can construct individual, household and location, then fixed effects variables to control for some 'unobserved heterogeneities.

$$y_{it} = a + b \cdot s_{it} + c \cdot e_{it} + \delta_i + u_{it}$$

Where δi controls for other observed and unobserved individual-specific characteristics, rewriting the above by $yit-1$ from both sides, we get:

$$y_{it} - y_{it-1} = (a - a) + b(s_{it} - s_{it-1}) + c(e_{it} - e_{it-1}) + (\delta_i - \delta_i) + (u_{it} - u_{it-1})$$

$$\Delta y_i = b\Delta s_i + c\Delta e_i + \theta_i \quad \text{where } \theta_i = u_{it} - u_{it-1}$$

According to this, $cov\ (x,\ u\ (q))$ = 0 and can solve the problem of endogeneity.

3.3.6 Reverse causality effect

From the model below, suppose that X affects y, this will cause a correlation between X and y. However, this relationship is not the causal effect of X on y. For example, the causal relationship between X and y is given as:

$$y = Xb + e$$

There is also a causal relationship between y and X given as:

$$X = ay + u$$

This paper has examined the effect of this reverse causality, government budget allocation effects in income distribution and poverty rate. However, these two dependent variables are less likely to influence the government budget allocation and other independent variables.

CHAPTER 4

EMPIRICAL RESULTS AND POLICY IMPLICATIONS

4.1 Empirical result

4.1.1 Income Inequality by provincial level in Thailand

The empirical testing starts with income inequality result in Thailand as table below:

Table 4.1 Income Inequality in Thailand (by Mean of Provincial Level)

year	mean
2006	0.638
2007	0.653
2008	0.560
2009	0.467
2010	0.465
2011	0.462
Total	0.541

From table above, income inequality in Thailand (by provincial level) had been lessened from 2006 to 2011. So the question that leads to further experiment is, “This was as a result from the sound government policy and budget allocation?”

4.1.2 Effect of government expenditure on Income Inequality

All independent variables to test the effect of government budget allocation to income inequality have been passed through UNIT root testing (Levin-Lin-Chu)

Which:

Ho: Panels contain unit root

Ha: Panels are stationary

The result shows p-value is 0.0000, so can reject Null hypothesis that the data is unit root. The factors used in the analysis are stationary.

For income inequality, after testing Hausman test, FE regression has been fitted with to test the effects. However, this study will do the experiment on both FE and RE.

$$GINI = F(G1t, G2t, Xit)$$

Or:

$$Y_{it} = \beta X_{it} + \alpha G_{it} + \mu$$

If we consider the total government budget allocation per capita and per each province from each interested ministry to income inequality, the result is shown below

Table 4.2 The Effect of Government Expenditure to GINI Coefficient in Thailand (by Provincial Level) 2006–2011: Fixed Effect and Random Effect Method

	FE				RE			
GINI	Coef.	Robust Std. Err.	t	P>t	Coef.	Robust Std. Err.	Z	P>Z
qlifecap	0.000018	3.86E-06	4.67*	0	2.43E-06	2.49E-06	0.97	0.33
gppmcap	0.042922	0.011906	3.61*	0.001	0.024121	0.007967	3.03*	0.002
gppacap	0.096568	0.103158	0.94	0.352	0.036212	0.090226	0.4	0.688
inflation	-0.00144	0.000541	-2.67*	0.009	-0.00021	7.74E-05	-2.77*	0.006
unemploy	-0.003	0.001604	-1.87	0.065	-6.1E-05	0.000331	-0.18	0.854
_cons	0.621545	0.063892	9.73	0	0.507453	0.015945	31.83	0

Number of observation375; -* Significant at 5%

So, with the fixed effect method, the total government budget allocation from these ministries has a significant influence on income inequality. A higher budget allocation means higher inequality. Consequently, the next step is to study the effect of each government budget allocation per capita to income inequality.

Table 4.3 The Effect of Government Expenditure to GINI Coefficient in Thailand (by Provincial Level) by Fixed Effect Method 2006-2011

GINI	Coef.	Robust Std. Err.	t	P>|t|
educap	3.49E-06	2.82E-06	1.24	0.22
healthcap	-0.00039	0.0000416	-9.46*	0
socialcap	0.000156	0.0002311	0.68	0.501
pmcap	0.00118	0.0002036	5.8*	0
agricap	0.000035	8.04E-06	4.36*	0
transcap	1.95E-05	0.0000113	1.72	0.089
comcap	-2.1E-05	0.0000415	-0.51	0.614
intcap	9.63E-05	0.0000193	4.99*	0
indcap	-0.00034	0.0004348	-0.78	0.438
localcap	-4.98E-06	6.80E-06	-0.73	0.467
unemploy	-0.01116	0.0070937	-1.57	0.12
inflation	0.486768	0.1006035	4.84*	0
gppmcap	-0.00048	0.0002065	-2.3*	0.024
gppacap	0.000604	0.0011168	0.54	0.59
_cons	1.057105	0.0696365	15.18	0

Number of observation: 375; -* Significant at 5%

Table 4.4 The Effect of Government Expenditure to GINI Coefficient in Thailand (by Provincial Level) by Random Effect Method 2006-2011

GINI	Coef.	Robust Std. Err.	z	P>z
educap	5.25E-07	1.78E-06	0.3	0.768
healthcap	-0.00017	0.0000298	-5.63*	0
socialcap	-0.00028	0.0000828	-3.41*	0.001
pmcap	0.000992	0.0001857	5.34*	0
agricap	3.91E-05	7.11E-06	5.51*	0
transcap	-1.4E-05	0.0000102	-1.41	0.159
comcap	-1.3E-05	0.0000426	-0.31	0.758
intcap	0.000121	0.0000208	5.83*	0
indcap	-0.0005	0.0005949	-0.83	0.404
localcap	-2.9E-05	5.49E-06	-5.29*	0
unemploy	-0.00079	0.0068994	-0.12	0.908
inflation	0.364574	0.0752308	4.85*	0
gppmcap	-0.00023	0.0001135	-2.01*	0.045
gppacap	-4.4E-05	0.0002567	-0.17	0.865
_cons	0.85843	0.0601366	14.27	0

Number of observation: 375; -* Significant at 5%

The Results revealed that:

1) For a fixed effect model, if we consider the provincial level, the effect of government budget allocation (per capita) from the ministry of Public health (with health insurance fund), ministry of Office of Prime Minister, the ministry of Agriculture and corporative and the ministry of Interior have a significant effect on the income inequality.

2) For the fixed effect, only the effect of the government budget allocation (per capita) from ministry of Public health (with health insurance fund), shows with the negative correlation with inequality, a higher government budget allocation equals a lower income inequality. The budget allocation per capita from the ministry of Office of Prime Minister, the ministry of Agriculture and corporative and ministry of Interior show that higher allocation brings to higher inequality.

3) For a random effect model, if consider the provincial level, the effect of government budget allocation (per capita) from the ministry of Public health (with health insurance fund), ministry of Social Development and Human Security, the ministry of Office of Prime Minister, the ministry of Agriculture and corporative, the ministry of Interior and local budget fund have a significant effect on the income inequality.

4) However, only the effect of the government budget allocation (per capita) from ministry of Public health (with health insurance fund), ministry of Social Development and Human Security and local budget fund show with the negative correlation with inequality which a higher government budget allocation equals a lower income inequality. The budget allocation per capita from the ministry of Office of Prime Minister, ministry of Agriculture and Corporative and ministry of Interior show in opposite result.

5) For the effect on inflation, higher inflation leads to higher inequality. This result is also supported by Galli and Hoeven (2001). During low inflation rate if the country conducted the restrictive monetary policy, it will increase the inequality. Might be able to imply that Thai economy at that time was in low inflation stage.

6) The effect of gross provincial product in manufacturing sector shows that the higher allocation leads to lower inequality.

4.1.3 Poverty ratio by provincial level in Thailand

The empirical testing starts with the poverty ratio result in Thailand as table below:

Table 4.5 Poverty Ratio in Thailand (by Mean of Provincial Level)

year	mean
2006	25.097
2007	23.550
2008	23.833
2009	22.174
2010	20.307
2011	14.916
Total	21.646

From table above, poverty ratio in Thailand (by provincial level) had been decreased from 2006 to 2011. So the question that leads to further experiment is, "This was as a result from the sound government policy and budget allocation?"

4.1.4 Effect of government expenditure on Poverty Ratio

All independent variables to test the effect of government budget allocations on poverty ratios have been passed through UNIT root testing (Levin-Lin-Chu)

which:

Ho: Panels contain unit root

Ha: Panels are stationary

The result shows p-value is 0.0000, so can reject Null hypothesis that the data is unit root. The factors used in the analysis are stationary.

For poverty ratio, after testing Hausman test, FE regression has been fitted with to test the effects. However, this study will do the experiment on both FE and RE.

Poverty ratio = F (G1t, G2t, Xit)

From table above, poverty ratio in Thailand (by provincial level) had been decreased from 2006 to 2011. So the question that leads to further experiment is, "This was as a result from the sound government policy and budget allocation?"

4.1.5 Effect of government expenditure on Poverty Ratio

All independent variables to test the effect of government budget allocations on poverty ratios have been passed through UNIT root testing (Levin-Lin-Chu)

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The result shows p-value is 0.0000, so can reject Null hypothesis that the data is unit root. The factors used in the analysis are stationary.

For poverty ratio, after testing Hausman test, FE regression has been fitted with to test the effects. However, this study will do the experiment on both FE and RE.

Poverty ratio = F (G1t, G2t, Xit)

Or:

$$Y_{it} = \beta X_{it} + \alpha G_{it} + \mu$$

Table 4.6 The Effect of Government Budget to Poverty Ratio in Thailand (by Provincial Level) 2006–2011: Fixed Effect and Random Effect Method

	FE				RE			
pr	Coef.	Robust Std. Err.	t	P>t	Coef.	Robust Std. Err.	z	P>z
qlifecap	0.000235	0.000202	1.16	0.249	-2.58E-06	0.000201	-0.01	0.99
gppmcap	3.959798	0.789269	5.02*	0	3.656068	0.824429	4.43*	0
gppacap	3.791894	9.54764	0.4	0.692	6.952829	9.166701	0.76	0.448
inflation	-0.01702	0.015907	-1.07	0.288	-0.03617	0.011497	-3.15*	0.002
unemploy	-0.20163	0.091216	-2.21*	0.03	-0.16727	0.052184	-3.21*	0.001
_cons	21.47979	2.659868	8.08	0	23.80134	2.784853	8.55	0

Number of observation375; -* Significant at 5%

Result shows that the total government budget allocation from these ministries do not have a significant influence on poverty, the next step is to study the effect of each government budget allocation per capita to income inequality

Table 4.7 The Effect of Government Budget to Poverty Ratio in Thailand (by Provincial Level) by Fixed Effect Method 2006-2011

pr	Coef.	Robust Std. Err.	t	P>t
educap	0.00023	0.0002604	0.88	0.38
healthcap	-0.01851	0.0035691	-5.19*	0
socialcap	-0.02767	0.0112903	-2.45*	0.017
pmcap	0.002597	0.0138661	0.19	0.852
agricap	-0.00068	0.0008601	-0.79	0.43
transcap	-0.00057	0.000789	-0.72	0.475
comcap	-2.1E-05	0.0091744	0	0.998
intcap	-0.00344	0.0012082	-2.85*	0.006
indcap	0.010459	0.015121	0.69	0.491
localcap	-0.00085	0.0004655	-1.83**	0.071
unemploy	0.707701	0.9525354	0.74	0.46
inflation	-3.98753	10.82776	-0.37	0.714
gppmcap	0.016592	0.0127896	1.3	0.199
gppacap	0.03366	0.0705565	0.48	0.635
_cons	53.64082	5.421591	9.89	0

Number of observation375; -* Significant at 5%, -** Significant at 10%

Table 4.8 The Effect of Government Budget to Poverty Ratio in Thailand (by Provincial Level) by Random Effect Method 2006-2011

pr	Coef.	Robust Std. Err.	z	P>z
educap	-8.6E-05	0.0002395	-0.36	0.721
healthcap	-0.00704	0.0031211	-2.25*	0.024
socialcap	-0.00837	0.0084707	-0.99	0.323
pmcap	0.018932	0.0133418	1.42	0.156
agricap	4.35E-05	0.0007674	0.06	0.955
transcap	-0.00182	0.0008943	-2.03*	0.042
comcap	-0.00074	0.0081153	-0.09	0.927
intcap	-0.00114	0.0012832	-0.88	0.376
indcap	-0.01044	0.0251142	-0.42	0.678
localcap	-0.00207	0.0005019	-4.13*	0
unemploy	1.121176	1.019719	1.1	0.272
inflation	7.478175	10.58171	0.71	0.48
gppmcap	-0.03124	0.0104046	-3*	0.003
gppacap	-0.09583	0.041801	-2.29*	0.022
_cons	48.5826	6.544574	7.42	0

Number of observation375; -* Significant at 5%

The Results revealed that:

1) For a fixed effect model, the effect of government budget allocation (per capita) from the ministry of Public health (with health insurance fund), ministry of Social Development and human Security, ministry of office of Interior and local budget fund have a significant effect on the poverty ratio. All can bring to lower poverty.

2) In a random effect model, the effect of government budget allocation (per capita) from the ministry of Public health (with health insurance fund), the ministry of Transportation also the local budget fund have a significant effect on the poverty ratio. A higher government budget allocation equals a lower poverty ratio.

3) For the effect on gross provincial product on manufacturing and agriculture sectors on random effect method, higher investment on manufacturing leads to lower poverty ratio.

4.2 Policy Implications

4.2.1. Provincial GINI and Poverty comparison

From the empirical results, can see that government budget allocation from some ministries have had significant impact to both inequality and poverty. However, the impact to inequality and poverty might not be in the same direction (lower inequality, higher poverty or vice versa).

Table 4.9 Effect to GINI and Poverty Ratio, Comparison of Each Ministries Budget Allocation per Capita (Fixed Effect)

	Fixed effect	
	GINI	Poverty ratio
educap		
healthcap	-	-
socialcap		-
pmcap	+	
agricap	+	
transcap		
comcap		
intcap	+	-
indcap		
localcap		
gppacap		
gppmcap	-	
inflation	+	
unemploy		

Fixed effect panel data method shows that only budget allocation from the ministry of Public health with health insurance fund can alleviate the inequality and poverty.

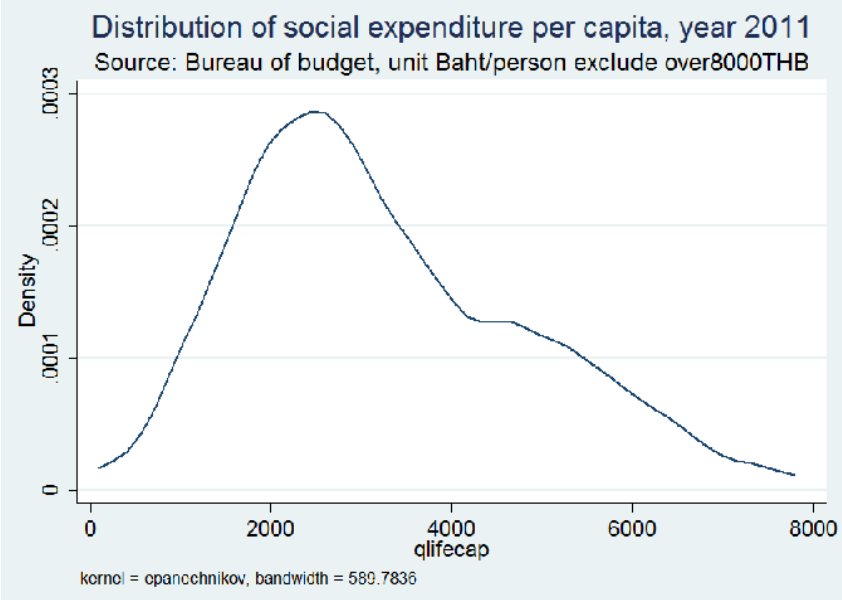
Table 4.10 Effect to GINI and Poverty Ratio, Comparison of Each Ministry's Budget Allocation per Capita (Random Effect)

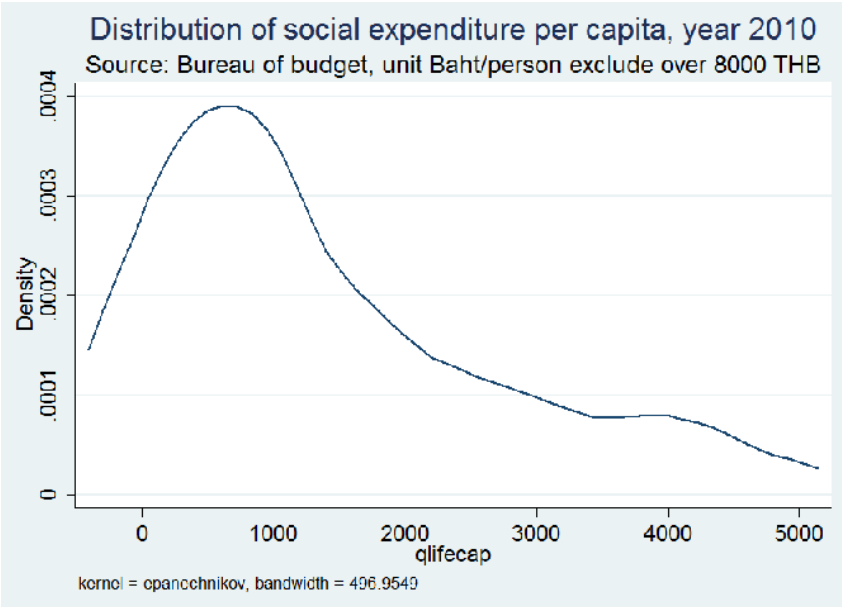
	Random effect	
	GINI	Poverty ratio
educap		
healthcap	-	-
socialcap	-	
pmcap	+	
agricap	+	
transcap		-
comcap		
intcap	-	
indcap		
localcap	-	-
gppacap		-
gppmcap	-	-
inflation	+	
unemploy		

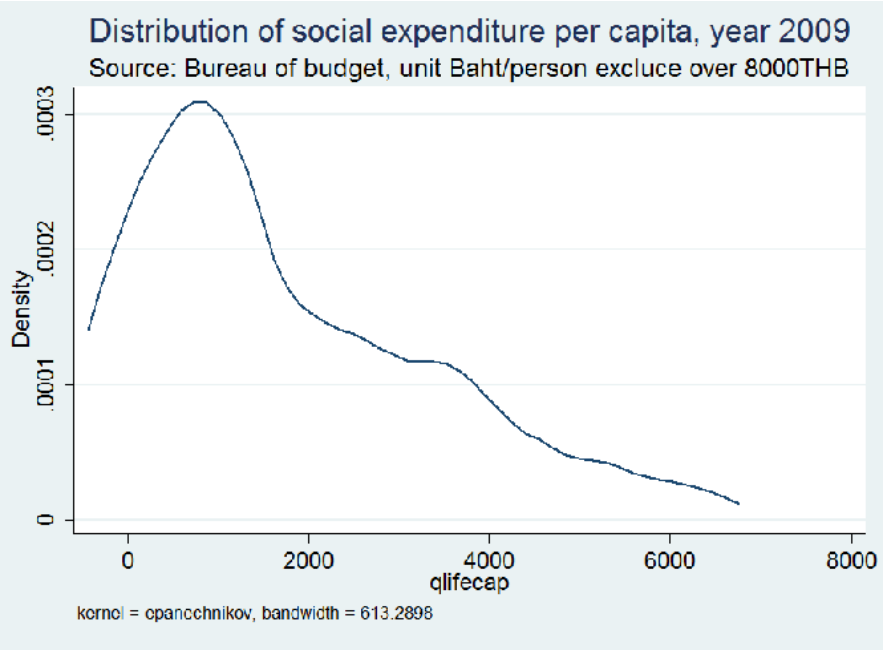
The random effect panel data method shows that only the budget allocation from the Ministry of Public Health (with the health insurance fund), the local budget fund, and the gross provincial product in manufacturing have higher allocations resulting in lower inequality and poverty.

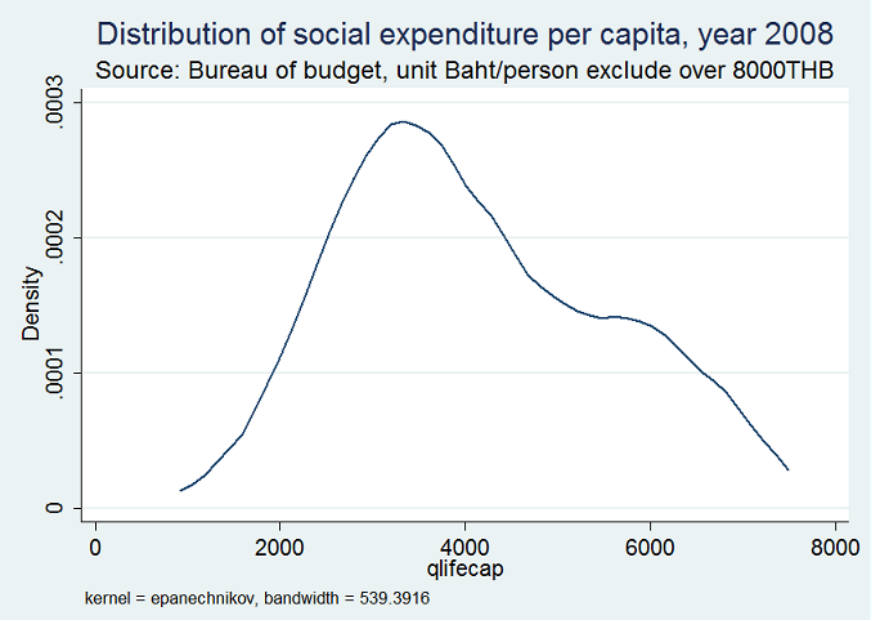
The budget for health can decrease poverty and inequality because universal health insurance not only increases people's ability to access essential health services but also reduces the financial risks posed by payments for health care. The study from Health Systems Research Institutes, which estimated the number of households becoming poor as a result of payments for health care before implementation of the universal health insurance policy (1996, 1998, 2000, and 2002) and after (2004, 2006, 2007, and 2008), found that the percentage of households falling below the poverty line had declined during the study periods. Before the implementation of health care in 2002, a total of 100,604 households nationwide were counted as poor because of health payments. Universal health insurance in the same year could have reduced the number of poor households by 37,628 (37.4%).

The next question is whether the official government budget has been equally distributed or not. Consider the charts below:






Distribution of social expenditure per capita, year 2009
Source: Bureau of budget, unit Baht/person excluce over 8000THB
Density
0
.0001
.0002
.0003
0
2000
4000
6000
8000
qlifecap
kernel = epanechnikov, bandwidth = 613.2898


Distribution of social expenditure per capita, year 2008
Source: Bureau of budget, unit Baht/person exclude over 8000THB
Density
0
.0001
.0002
.0003
0
2000
4000
6000
8000
qlifecap
kernel = epanechnikov, bandwidth = 539.3916

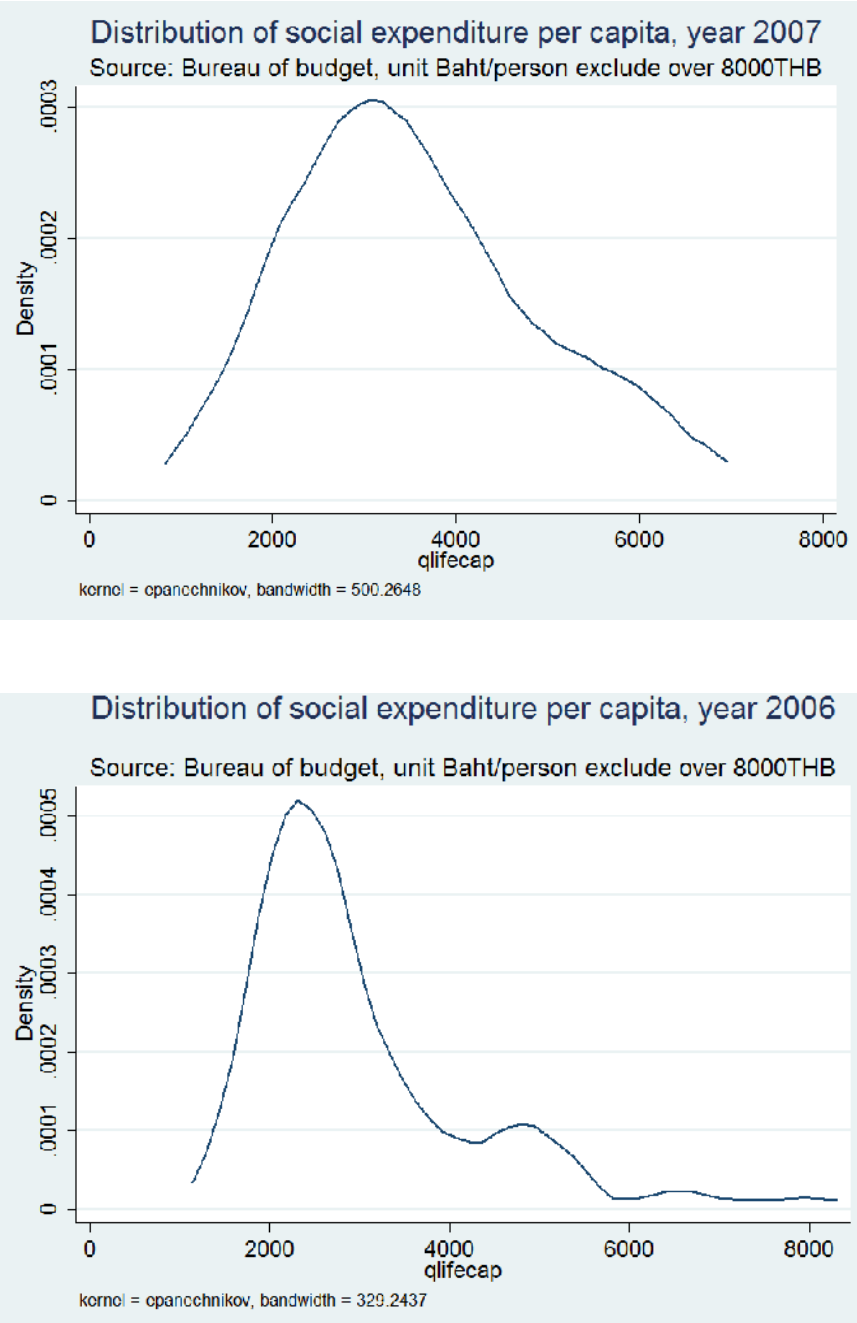


Figure 4.1 Distribution of Social Expenditure per Capita During 2006–2011

From the charts on the distribution of social expenditure per capita above, we can consider that during roughly 2007–2008, Thailand had the best distribution in government budget allocation to people, almost in the normal distribution shape of

Kernel distribution charts. The average government allocation per capita was around 4000 THB and 4700 THB in 2007–2008 respectively.

This might be because the government, after the Administrative Reform Council in 2007, was the head of government. The government budget fell into a deficit, which increased overall expenditures by 13% compared to 2006. In 2007, the government invested mostly in education, reforming the economy, and promoting health. In the first quarter of 2007, the percentage of government allocation was approximately 22% compared to the previous year's 17%.

From figure 4.1, the worst distribution year was 2006, in which only a small portion of the Thai population received high government budget support. The distribution charts show that these results align with the GINI coefficient (the GINI index was highest in 2006). This might be because of the accumulation of economic problems, since the later stages of Police Lieutenant Colonel Shinawatra's power and political crisis occurred during the coup d'état of that year.

Table 4.11 Decomposition of Inequality Indices by Region in Thailand During 2006–2011

Gini coefficient by regional subgroups	
K	Gini
2 (Central)	0.398
3 (North)	0.428
4 (Northeast)	0.369
5 (South)	0.407

The table above shows inequality in the government budget allocation for each region in Thailand. A point to note is that the GINI index shows that during the study period (2006–2011), the northern region had the highest inequality, followed by the Southern region. This leads to a further explanation in the table below.

Table 4.12 The Inequality of Government Budget Distribution per Capita to Each Region (THB)

Region	2006	2007	2008	2009	2010	2011	Total
Central	3363.0	3793.7	4091.1	1586.4	1398.8	4291.4	3087.4
North	3855.8	4848.5	5672.3	3157.6	2782.3	5120.7	4239.5
North-east	3198.1	3112.6	3822.9	2182.6	1811.8	3302.6	2905.1
South	3579.9	4584.1	5566.2	2815.8	2215.5	4473.7	3872.5

Points to note from Table 4.13 follow:

1) Because of timing inconsistencies and distributive politics, the budget allocation per capita varied annually and regionally.

2) During 2009–2011, the government budget per capita was lower compared to other study years. This was mainly due to economic recession and perhaps because the government focused on non-budgetary spending. This assumption is supported by figure 4.2, which shows a sharp increase in non-budgetary government spending compared to GDP, while the government budget allocation percentage compared to GDP was lower in these two years.

3) In 2009–2010, the Thai economy was impacted by the range of adjustment of the recession in the United States and Europe of the previous two years. The GDP of Thailand in 2010 increased from the year 2009 because the government had injected policy projects (through non-budgetary government spending) and pushed banks to increase lending to stimulate spending in the economy.

4) The economic policy was to promote a free market by increasing spending through various types of projects and low-interest loans to public groups, which used non-budgetary government spending. Most of these projects promoted consumption rather than investment and spread to a group of people who did not help citizens achieve productivity and real bargaining power. Thailand's economy grew just in some sectors, and gains were not distributed to the public at large.

5) During 2006–2008, the Thai Rak Thai party, under the shadow of Police Lieutenant Colonel Shinawatra's power, formed a government and based its voting area in the northern region. From the table above, this explains the high government

budget allocation per capita in this region. Even though there border skirmishes in the south of Thailand during the same period, the budget allocation per capita to the southern region was lower.

6) One might assume that the reason why there was a sharp increase in budget allocation per capita into the southern region of Thailand in 2011 was because at that time, the Democrat party was the government and the southern region was the base for this party.

7) As mentioned, the northeastern part of Thailand had a highest poverty ratio and high inequality. However, from the table above, we can see that its budget allocation per capita was the lowest compared to other regions. This means that the government did not practically focus on solving the poverty issue.

8) Apart from this, from Tables 4.13 and 4.14 below, if we consider only the government budget per capita (from nine ministries and local budget allocation) in 2011, from 75 studied provinces, there were 34 provinces with per-capita allocations between 14,000 and 16,000THB. More than 50% were from the southern region. However, 4 provinces from 75 provinces achieved a per-capita budget allocation lower than 10,000 THB, all of which were from the northeastern region. Contrastingly, six provinces received government budget support higher than 30,000 THB per person. These included the big cities from each region, such as Ayutthaya, Phuket, Chiang Mai, and Songkhla.

Table 4.13 The Range of Government Budget Distribution per Capita by Province in 2011 (THB)

Per capita government budget (THB in 2011)	Number of provinces	Percentage	Cumulative percentage
Less than 10000	4	5.3	5.3
10,001–11,000	12	16.0	21.3
11,001–12,000	8	10.7	32.0
12,001–14,000	24	32.0	64.0
14,001–16,000	10	13.3	77.3
16,001–18,000	7	9.3	86.7
18,001–20,000	4	5.3	92.0
20,001–30,000	6	8.0	100.0

Table 4.14 Government Budget Distribution per Capita Disaggregated by Region and Province in 2011 (THB)

Region	Less than 10,000	10,001–11,000	11,001–12,000	12,001–16,000	16,001–18,000	18,001–20,000	20,001–30,000
Central		5	2	10	4	2	2
North			4	8	2	1	2
North-east	4	7	1	6		1	
South			1	10	1		2
Total	4	12	8	34	7	4	6

This data supports the implication that there was inequality in budget allocation in Thailand. The big and non-poor provinces, rather than the poor

provinces, received a higher allocation from the government. One can clearly see from Table 4.15 that the high government budget per person (more than 16,001 THB) mostly flowed to provinces in the central and northern regions, while the lower per-capita allocation (less than 11,001 THB) flowed to provinces in the northeastern region. Provinces in which the allocation per person was less than 10,000 THB were all from the northeastern region.

The question is whether the Thai government can rely only on government budgets from each ministry to solve the inequality and poverty issue. If we only focus on this fiscal tool, we discover that inequality and poverty have not improved as expected. Is there any other tool for this purpose?

4.2.2 Non-budgetary government spending

From the results, there might be a question of whether is it acceptable that the government budget supporting some activities, such as education and public health, cannot eliminate inequality and poverty. This can happen because this study focuses only on the government budget; however, there is another type of budget that invests in inequality and poverty reduction.

Currently, non-budgetary government spending plays an important role as a support mechanism of the government, especially with regard to fiscal policy, economic stimulus, price stabilization, employment, loans, and income distribution. Apart from this, non-budgetary government spending also plays a role in the reduction of the annual budget. Such spending aims to decentralize and empower the government to take action more effectively.

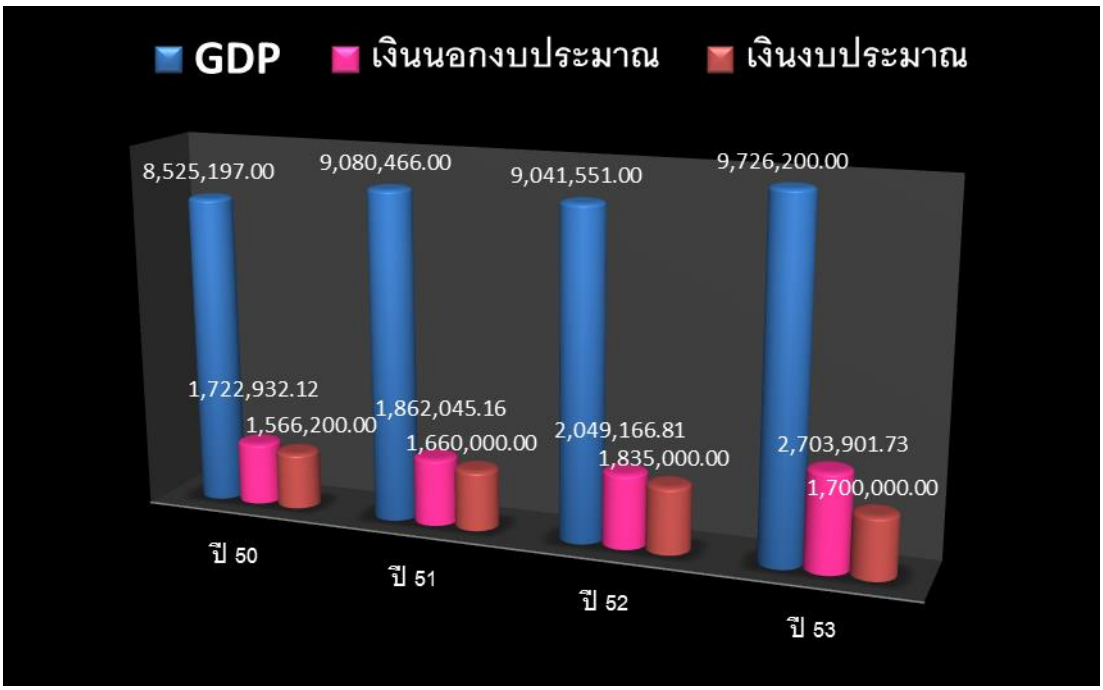


Figure 4.2 Comparison of Non-Budgetary Government Spending, Government Budget, and GDP in Thailand During 2007–2010 (unit: million baht)

Source: Ministry of Finance, 2010: 57.

From Table 4.2, we can see that the total budget for non-budgetary government spending was slightly higher than the formal government budget fund during 2007–2010. Non-budgetary government spending accounted for approximately 23% of GDP, while the government budget expenditure was around 20% of GDP.

Ministry of Finance (2014) divided management of non-budgetary government spending into three categories: working capital, deposits, and money outside budget law. The comptroller of the Ministry of Finance is responsible for overall supervision of the budget. This paper will focus on the working capital category.

Working capital can be used to pay for activities or purposes under the law without having to submit to be counted as government revenue. For example, in 2014, a total of 115 funds were divided to finance working capital for such loans, which included the funds for housing and social welfare, working capital to sales and production, working capital to service, and working capital to support promotion.

Ministry of Finance (2014) mentioned that for Thailand, non-budgetary government spending is the major mechanism for the government to drive policies, reform faster, and restructure the state. This applies especially to the working capital category, which can be carried out with regulations of its own. Moreover, non-budgetary government spending has a higher flexibility and effectiveness and is convenient to operate compared to formal government budget expenditures.

Examples of non-budgetary government spending with specific objectives is the Village Fund, which aims to stimulate economic foundations; the Fund to Help Farmers, set up to assist farmers and elevate commodity prices; and the Oil Fund, the mission of which is to maintain price stability via stable oil prices. As well, the National Health Insurance Fund is intended to provide the public with equal access to medical care.

Non-budgetary government spending plays a role in reducing the burden of the formal government budget, as it opens working capital and other agencies to play important roles and collect revenue from operations for use under their mandates without delivery to government revenue. In theory, the government therefore does not need to allocate funds or working capital to support those particular causes. However, in the case of Thailand, non-budgetary government spending was not fully effective in reducing the social burden on the government's budget. It was found that the majority of working capital does not have its own source of revenue and must be supported from the government budget.

In the 2015 budget plan, the capital budget has been allocated a total of 155,231 million baht. The highest allocations are for national health insurance and the social security funds. In particular, the National Health Fund has no source of income of its own, and even the social security funds have revenue contributed by employees and employers. However, the government also has an obligation to contribute to the fund.

The following are some observations on non-budgetary government spending (Ministry of Finance, 2014)

1) Most of the funds established to help poor people did not focus on the poor directly but rather focused on the agricultural sector. This might be because the poor are mainly in agriculture. However, support meant to improve productivity, expand sale distribution, and stabilize prices, as well as increase farmer loans, may not really be fully realized. Rangsan Thanapornphun (1993) revealed that in practice, the fund paid to farmers leaked to benefit mill owners, traders, whole sellers, importers, and government officers. As a result, the farmers did not benefit from the use of funds as they should have.

2) Although the establishment of a fund to help the underprivileged would need to focus on corruption, the majority of the fund was set up in 2003 and was allocated a very small budget, which leads me to conclude that the poor did not benefit from these funds. For example, the funds for a school lunch program in elementary schools were plagued by news about corruption in the procurement of milk for the children in 2002. As a result, there is reason enough to believe that funds were leaked. The poor people who need assistance from these funds would not benefit much from such a budget.

3) Politicians tend to use the policy to help farmers and the poor for political purposes. This is clearly visible from the establishment of the Village Fund. In principle, this fund is good because it increases funds to farmers and poor residents in a community. The idea is similar to that behind the Grameen Bank, which was founded by Muhammad Yunus in Bangladesh to provide the poor with loans without collateral. However, in Thailand’s case, the Village Fund was hastily executed because politicians used it as a tool to stimulate the economy and distribute one million baht to cities. This has obscured whether the loan directly benefited the poor.

Table 4.15 Selected Non-Budgetary Government Spending During 2006–2011 (Unit: Million Baht)

Non-budgetary government spending	2006	2007	2008	2009	2010	2011
Loan funds for education	27849.6	25108.9	31235.6	24218.6	25675.4	20068.8
Fund to Help Farmers	2000	2500	2500	2500	2453	1000
Agricultural Development Fund	130	102	250	300	170	1127
Fund restructuring agricultural production to enhance the country's competitiveness	100	200	100	100	140	0
The National Health Insurance Fund	35796.6	39666.8	75125.9	76598.8	80597.7	89348.8

Table 4.15 provides examples of non-budget funds with a higher budget allocated during 2006–2011. From this data, we can note the following points:

Firstly, if one considers loan funds for education, the non-budgetary government spending has clearly been higher than government expenditures from the Ministry of Education itself. As a result, government expenditures from the Ministry of Education cannot alleviate inequality and poverty. It should be explained that there has been non-budgetary government spending, which supports the poor for education purposes that might be pro-poor and increase equality.

Secondly, similar to the loan funds for education, non-budgetary government spending to farmers, which included the Fund to Help Farmers, the Agricultural Development Fund, and the fund restructuring agricultural production to enhance the country's competitiveness, was much higher than the government budget from the Ministry of Agriculture and Corporative. Even though the empirical results show that the budget allocation from the Ministry of Agriculture and Corporative might increase inequality and poverty, with the mass non-budgetary government spending to farmers,

the non-budget fund itself might benefit farmers in terms of poverty reduction and alleviation of inequality.

Finally, the national health insurance funds, which were the highest sources of non-budgetary government spending during 2006–2011, were much higher than the government expenditure budget from the Ministry of Public Health. As a result, non-budgetary government spending for national health insurance might be the tool for reducing poverty and inequality.

4.2.3 Government budget redistribution and unemployment in Thailand

I have conducted a study of unemployment projections from the National Economic and Social Development Board, using the factor of GDP growth in 2011 and the labor force (employment and unemployment over the past 20 years, 1990–2010) as the basis for calculation. The results are below:

The projection showed that in 2011, Thailand had a labor force of around 39.1 million, up from the previous year's 4.5 million people, counted as 1.2%. It was expected that about 38.5 million people would be employed in 2011, 4.6 million people more than the previous year, counted as a 1.2% increase. Also, most were from nonagricultural sectors.

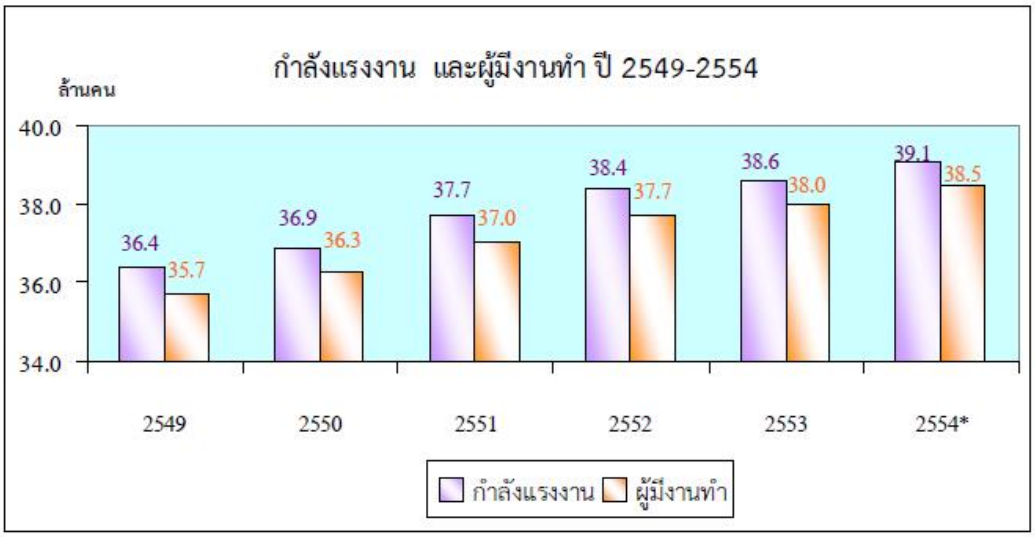


Figure 4.34 Workforce Trends: Employment and Unemployment During 2006–2011

Source: The National Economic and Social Development Board, 2011: 35.

From these projection results, the unemployment rate in 2011 was about 1.1%, about the same rate as in the previous year.

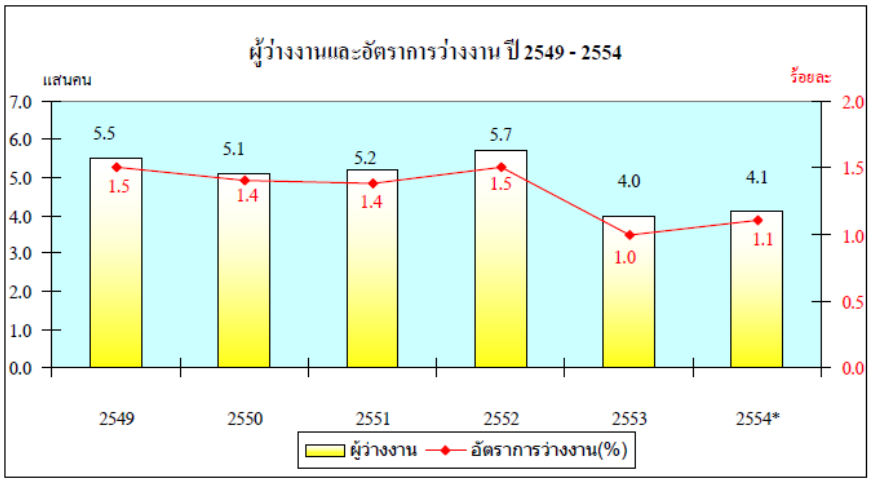


Figure 4.35 Workforce Trends: Unemployment and Unemployment Rates During 2006–2011

Source: The National Economic and Social Development Board, 2011: 37.

However, the budget allocations of some ministries could alleviate the problem of inequality and poverty. One of the measurements of this success is the unemployment rate. Data from the National Statistical Office shows that during 2011–2012, the unemployment rate for each province in Thailand decreased substantially.

Table 4.16 Unemployment Rate in Thailand During 2010–2011

Unemployment rate (%)	Number of provinces	
	2010	2011
0.1–0.5	17	34
0.6–0.9	21	26
1.0–1.5	23	12
1.6–1.9	7	3
2+	7	0

The table shows that there were fewer provinces with higher unemployment rates and higher numbers in the lower rates. There was no province with an unemployment rate of 2% or higher in 2011, while in 2010 there were seven provinces with such a rate, meaning there was no province with severe unemployment in 2011. Also, the number of provinces with the lowest unemployment rate (0.1–0.5) increased doubly.

The detailed results here were confirmed by actual results from the National Statistical Office, which showed that the overall unemployment rate in Thailand during 2010–2011 decreased.

Table 4.17 The Unemployment Rate in Thailand during 2004–2013

Sex	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total	2.1	1.8	1.5	1.4	1.4	1.5	1	0.7	0.7	0.7
Male	2.1	1.9	1.6	1.5	1.5	1.5	1.1	0.7	0.7	0.8
Female	2.1	1.7	1.4	1.2	1.3	1.4	1	0.6	0.6	0.7

Source: The Labor Force Survey, National Statistical Office, Ministry of Information and Communication Technology. 2013.

Where

$$\text{Unemployment Rate} = \frac{\text{Unemployed} \times 100}{\text{Total labor force}}$$

From the empirical results in the previous chapter, some government budget allocation relating to social development can alleviate the problem of inequality and poverty effectively. Examples of government budget allocations from the Ministry of Agriculture and Corporative that aim to alleviate the unemployment rate follow:

1) The farm project of Her Majesty the Queen

2) The promotion of careers in agriculture, crops, livestock, and fisheries

(1) The promotion of a more effective agricultural production cycle.

(2) The support for a market for products not consumed in the household or for which production exceeds demand

Examples of government budget allocation from the Ministry of Industry that aim to alleviate the unemployment rate follow:

1) The improvement of productivity, the goal of which is to streamline production and delivery and reduce costs in the factory sector. The ministry has a good strategy to select and consider potential project participants.

2) The raising of the capacity of the workforce, the goal of which is to rescue workers being laid off because of lower production volumes and plant closures. In the case of a labor surplus, the ministry must encourage adaptive skills training to workers for new production. As well, plants may have to help negotiate delays before dismissal. In some cases, there might be a budget from the government sector to compensate employees. Workers also get paid while helping ease the burden of paying the wages of entrepreneurship. For some workers who are laid off, the Ministry of Industry should take an active role in co-financing and have resources to support new employment.

3) The promotion of family businesses, both in training and the development of products. The source of supply and the market is important

4) A program to slow layoffs

5) An increase in the opportunity for unemployed workers to work in both temporary jobs in government fields or move to other businesses. The government may even support the unemployed in freelance fields.

To further explore differences in budget allocation, especially from the Ministry of Industry to each province, regardless of poverty level, this paper has

performed an experiment by grouping the provinces by poverty ratio level and has done a t-test.

Group 0 represented the rich (poverty ratio between 0–19.99).

Group 1 represented the poor (poverty ratio between 40–79.99).

The result is below:

Table 4.18 Mean Comparison Test of Government Spending by Provincial Groups

Group	Obs	Mean	Std.Err	Std.Dev	(95% Conf. Interval)	
0	220	7.230931	0.463532	6.875285	6.317377	8.144484
1	39	3.922092	0.524466	3.275288	2.860367	4.983818
Combined	259	6.732688	0.40798	6.565817	5.929294	7.536083
diff		3.308838	1.124189		1.095043	5.522633

t=2.9433
degree of freedom =257

From the result above, we can see that budget allocation per capita from the Ministry of Industry differs significantly between poor provinces (PR between 40–79.99) and non-poor provinces (PR between 0–19.99). This means that the budget from this ministry had been allocated according poverty level. Even the empirical results show that the budget allocation from the Ministry of Industry cannot significantly alleviate the poverty ratio.

Examples of government budget allocations from the Ministry of Health that aim to alleviate the unemployment rate follow:

1) The promotion of health in the workplace, including the reduction of health risk factors such as drinking and smoking, and other diseases such as heart disease and cancer. If these diseases occur, workers may need to leave the business cycle, which definitely impacts household economy.

However, as changes in inequality and poverty are not purely the effect of these specific programs, one cannot conclude that these programs (such as support for the elderly) are not effective tools. This might be because other factors had a vital

negative influence in those particular provinces, so these programs alone could not improve income distribution and lower poverty rates. Even if inequality and poverty had been improved, one still could not conclude that this was purely from these specific programs, as other factors might support such an outcome.

4.2.4 Overall inequality in Thailand and special programmes for inequality and poverty reduction purpose

Inequality in Thailand has been addressed, especially for provinces in the northern and north-eastern regions.

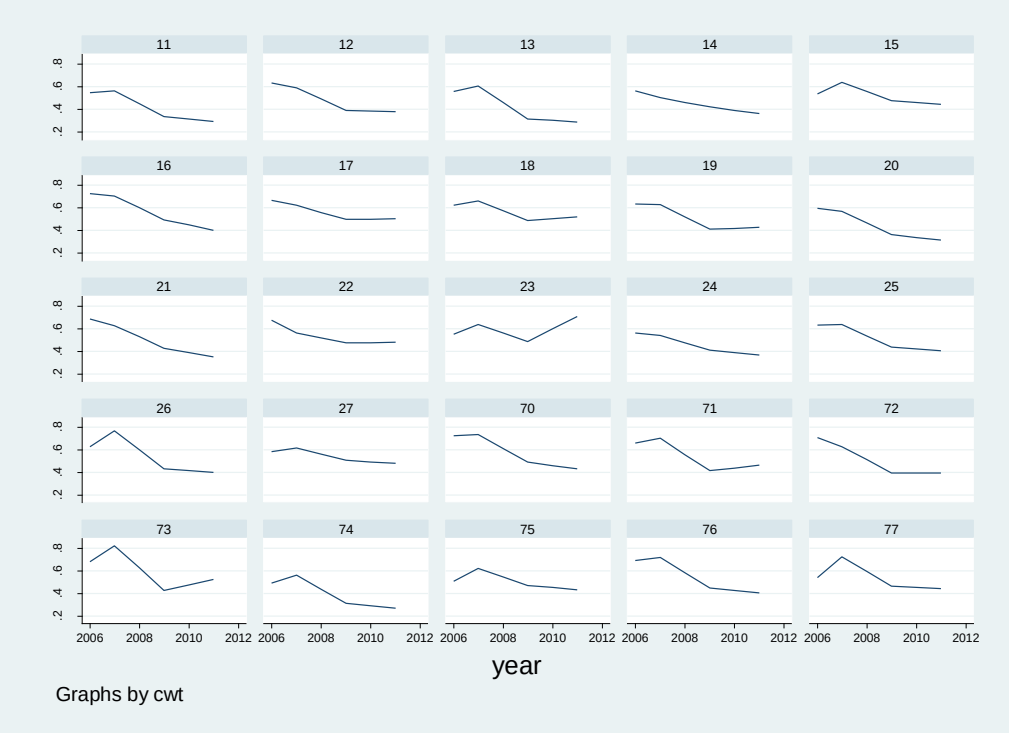


Figure 4.3 GINI Coefficients for Central Region in Thailand 2006–2011

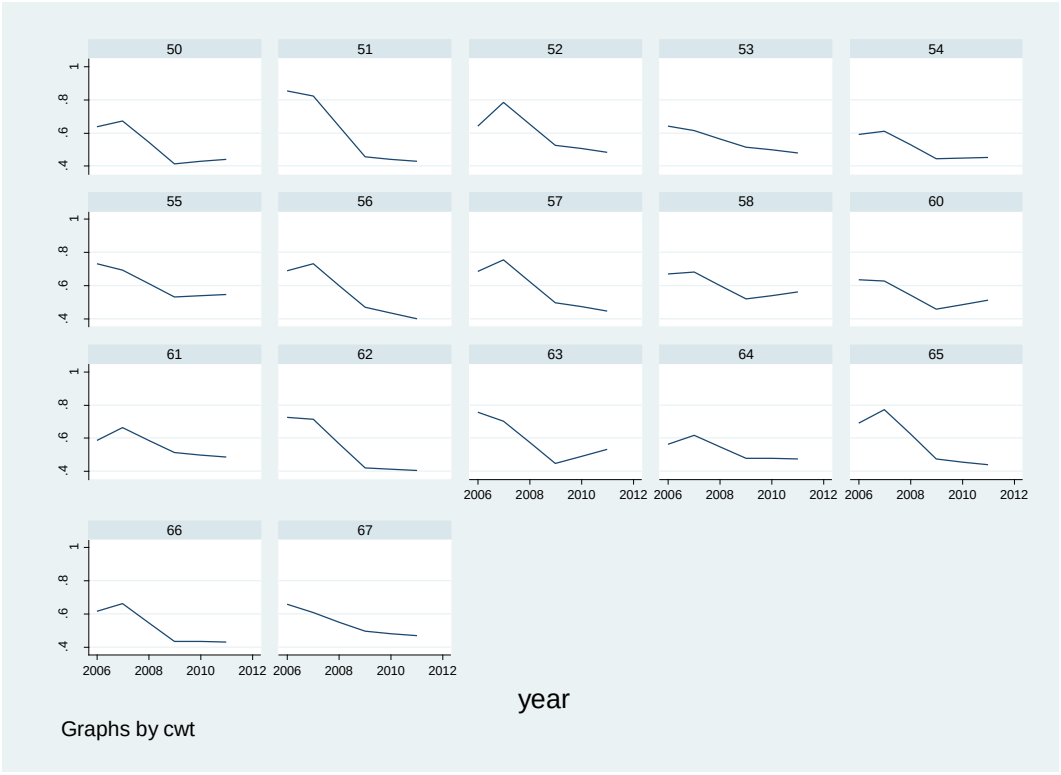


Figure 4.4 GINI Coefficients for Northern Region in Thailand 2006–2011

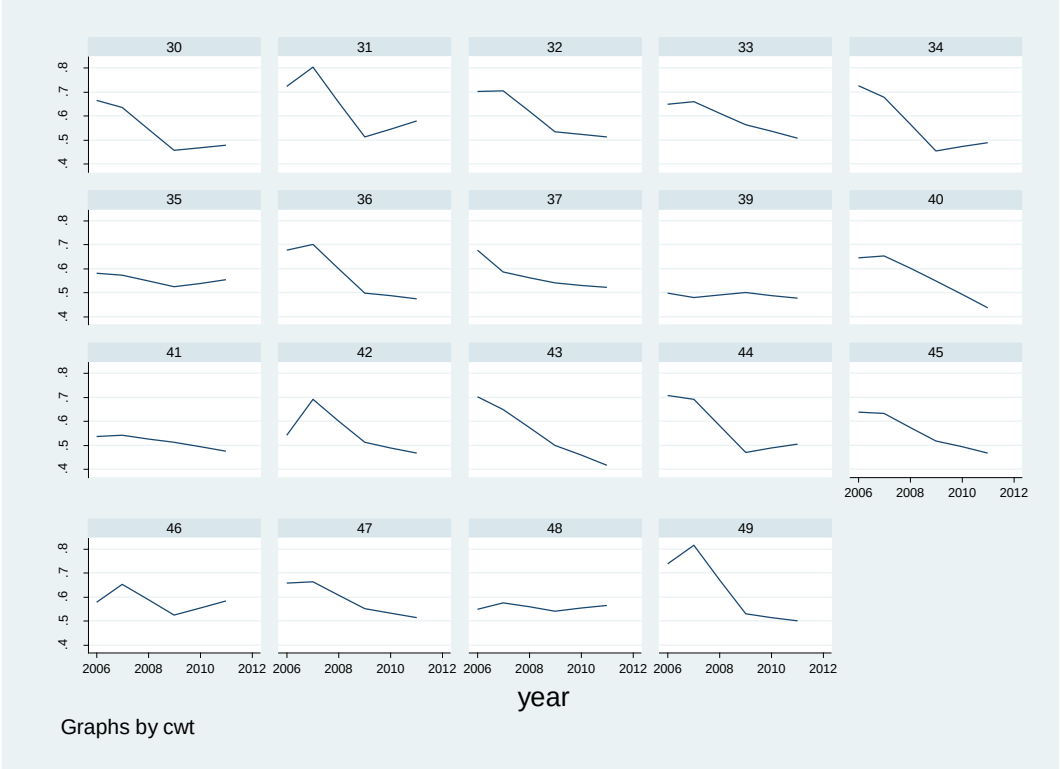


Figure 4.5 GINI Coefficients for North-Eastern Region in Thailand 2006–2011

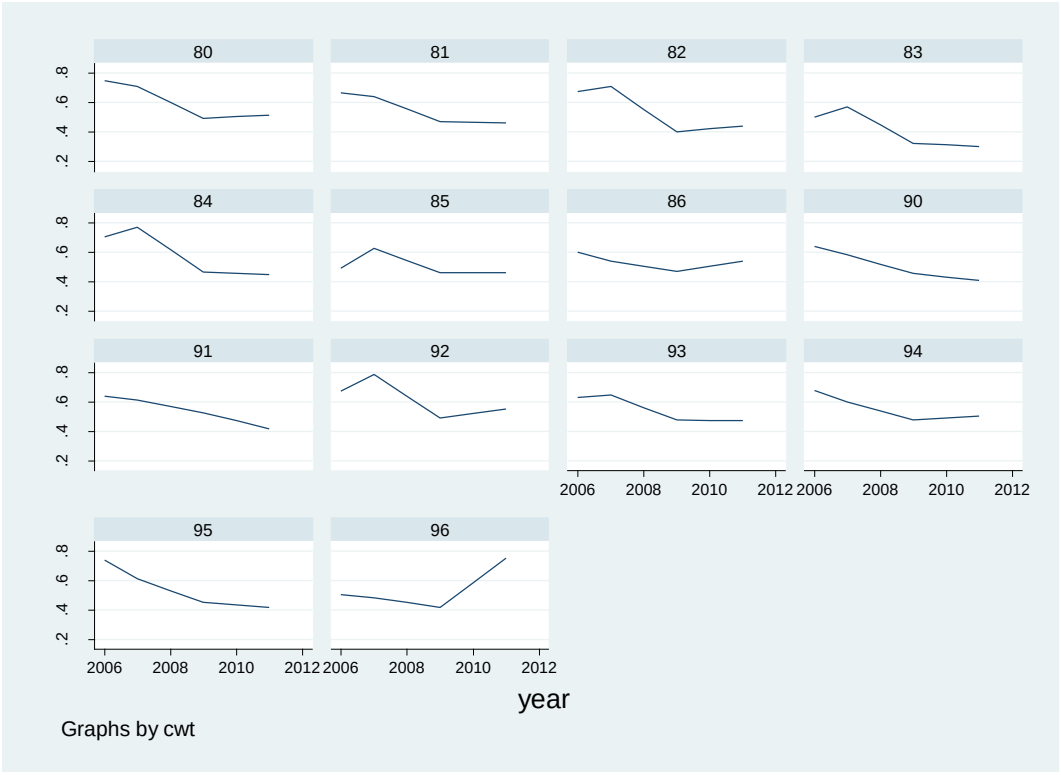


Figure 4.6 GINI Coefficients for Southern Region in Thailand 2006–2011

The question is, has Thailand already successfully implemented programmes to alleviate inequality and by which criteria (regional, community or focus group). If considered in terms of the budget allocation per capita in each province, inequality has not been equalised. Some provinces have been allocated a high budget per capita in a specific year and for a specific objective. Specific government programmes to each particular province are been detailed below.

4.2.4.1 Education

Unequal educational opportunity is a focus issue recently. Ministry of Education (2011) found that the expenditure budget in education of Thailand accounted for 24% of the national budget, or about 500,000 million baht / year, which ranked second in the world. With this, average budget per provinces was about 6,500 million baht / year. However, these budgets were scheduled to spend 95% to non-direct student purpose such as salaries, equipment, buildings, leaving only about 5% of the school budget can be used to improve the quality of teaching.

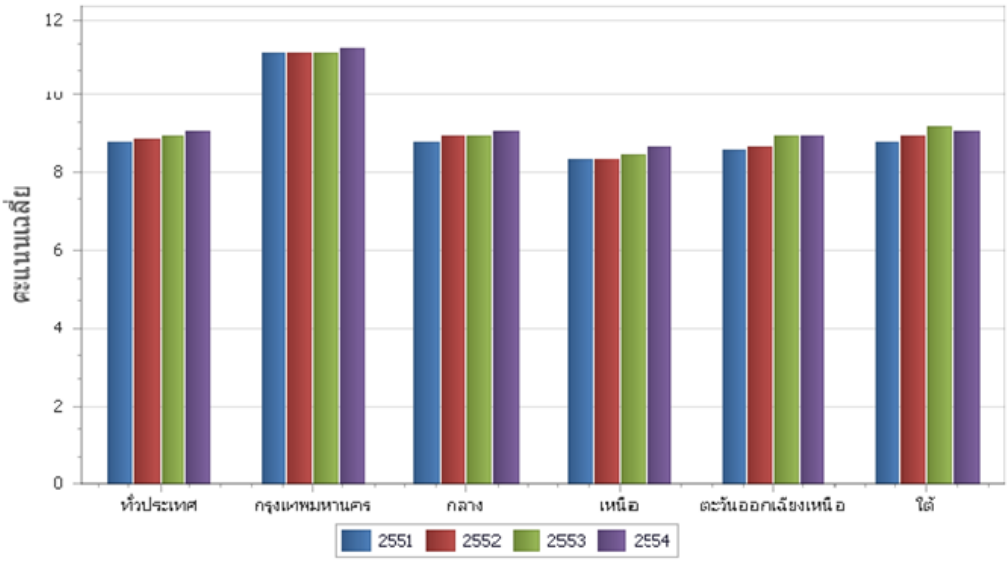


Figure 4.7 Average Education Year in Thailand During 2008-2011

Source: Ministry of Education, 2011:47.

From the study of office of the Education Council, the average education year during 2008-2011 had been increased in all regions, except on southern region that was slightly decreased in 2011 comparing to 2010.

Also, the average year of education, for student age above 15 years old, had been increased between 2010-2011 that approximately 50% of provinces in Thailand had average education year around 8-8.9 years in 2010, and up to 60% of all provinces in 2011.

Table 4.19 Average Education Year in Thailand by Provinces During 2010-2011

AVG education year	Number of provinces	
	2010	2011
6-6.9	3	3
7-7.9	30	25
8-8.9	38	42
9-9.9	3	4
10 up	1	1

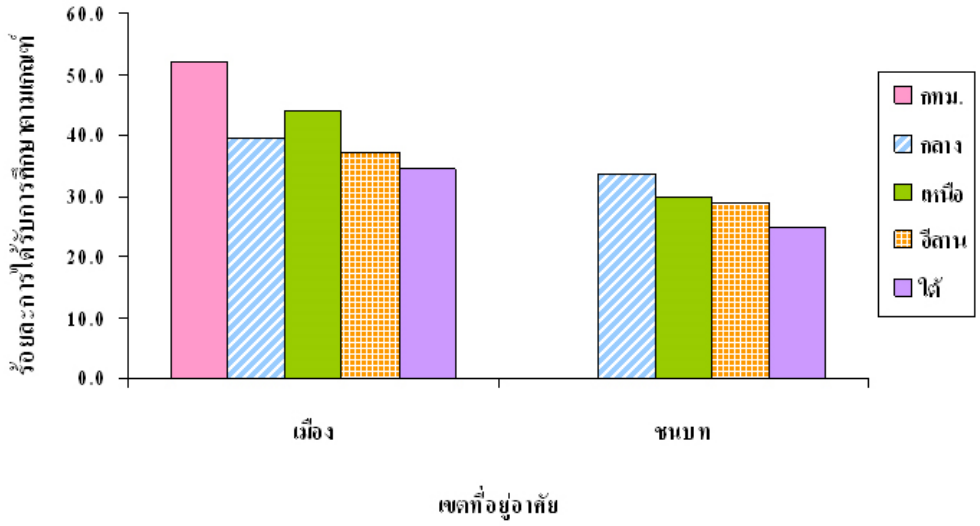


Figure 4.8 Percentage of Students (age 15 and above) who Receive The 15 Years Education Separate by Area

Source: Patarawanich, U. and Umornsirisomboon, P., 2005.

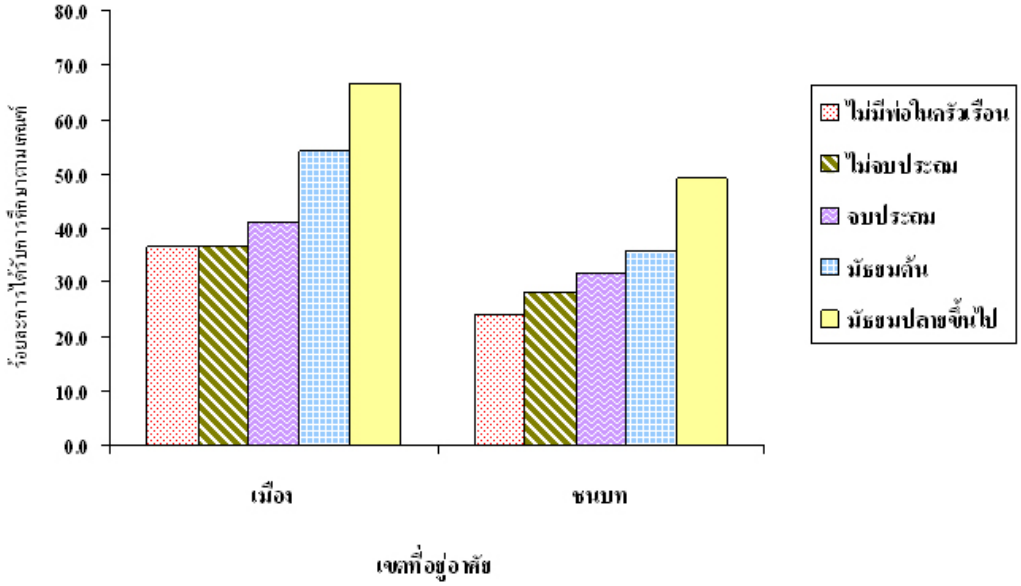


Figure 4.9 Percentage of Students (age 15 and above) who Receive The 15 years Education Separate by Paternity Education Level and Area

Source: Patarawanich, U. and Umornsirisomboon, P., 2005.

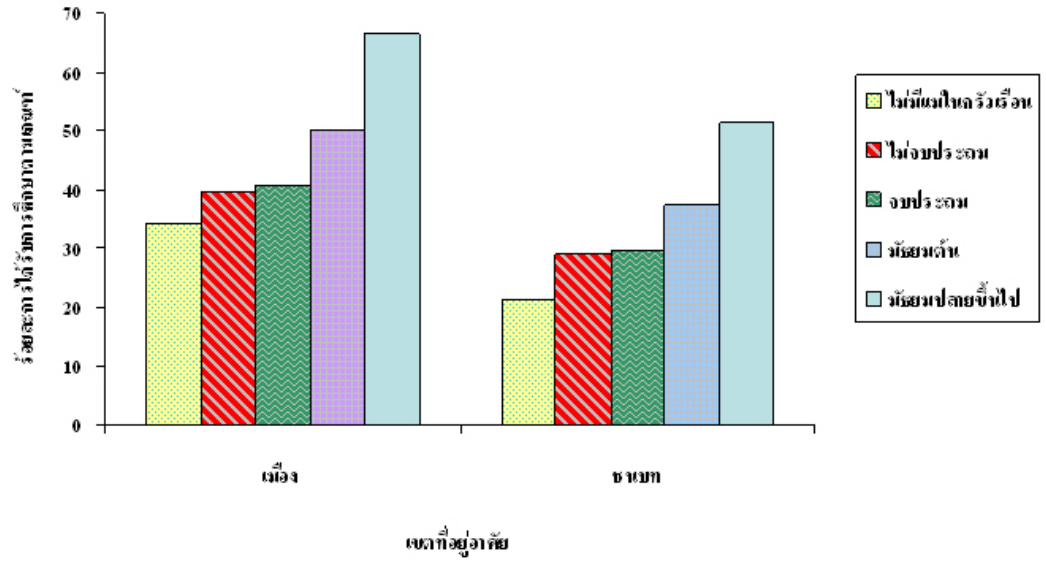


Figure 4.10 Percentage of Students (age 15 and above) who Receive The 15 Years Education Separate by Maternity Education Level and Area

Source: Patarawanich, U. and Umornsirisomboon, P., 2005.

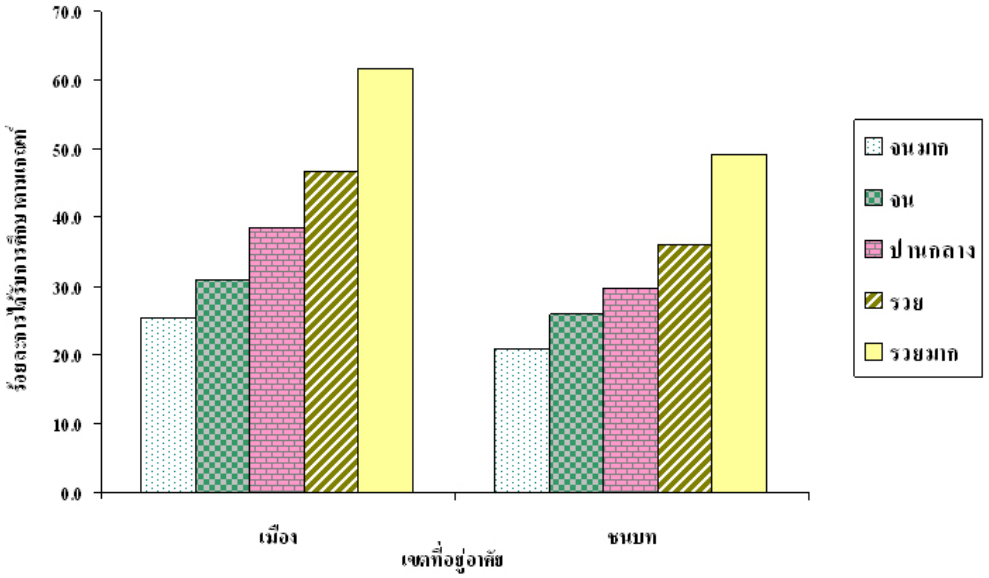


Figure 4.11 Percentage of Students (age 15 and above) who Receive The 15 Years Education Separate by Family Economic Level

Source: Patarawanich, U. and Umornsirisomboon, P., 2005.

From the charts above and statistic from 2005, can see that the different in education opportunity are from the factors of the area whether it is urban or rural, from the education of parents and family economic level.

Students in urban area tended to have higher opportunity to get the mandatory education level, unlike those who lived in rural area in all regions. The highest different percentage was for student in northern and southern regions.

The education level of parents also had an effect to education to their children. Family whose parents have a higher education level tends to encourage their children to complete at least mandatory education level.

Family's economic level was very important for average education year. The students whose their family with the low economic status had a lower percentage to complete mandatory degree comparing to the family with a better economic status and applied to all regions.

As a result, government should focus on the program that can alleviate the problems above (living area, parents' education year and education supporting fee) so that can promote and increase the average education year of students.

From the empirical results in the previous chapter, some government budget allocation related to education that might alleviate the problem of inequality and poverty, below are the example:

The examples of government budget allocation from ministry of Education that aim to promote the average education year are:

1) Education budget to southern border provinces
2) 15 years education free
3) Increase the number of secondary schools in rural areas
4) Promoting and establishment of adult education

The examples of government budget allocation from ministry of Social Development and Human Security that can promote the average education year are:

1) Program to alleviate the problem of family violence
2) Program to minimize and stop Pregnancy premature for students
3) Program to encourage families have fewer children.

From the socio economic statistics database, this study found that the provinces with a high education budget allocation were Songkhla in 2008 to 2011, which had a higher budget to support education in the southern border provinces; and Phatumtanee in 2011, where one of the government-specific programmes allocated a high budget was a vocational school.

Figure 4.12 Education Budget per Capita: Songkhla 2006–2011

Figure 4.13 Education Budget per Capita: Phatumtanee 2006–2011

For education budget to southern border provinces, the ministry of Education, with the cooperation of government affiliates, did develop operational plans for the southern border provinces. The annual education budget for the southern **2553 (2010)** budget was allocated according to the ministry of Finance. According to the development plan for the southern border of Thailand, (a special ad hoc development zone in the southern border provinces), this is considered in accordance with the state's drive to develop quality education, reflecting the needs of the life, culture and identity of the public. Education is the key that can enhance the quality of life. The ministry of Education has focused on the education development plan for the southern

border as a framework guiding the work with project activities, including budget allocation to provide maximum benefits to improve people's quality of life.

Since the fiscal year 2009, the cabinet has approved development plans for a special ad hoc development zone, to create opportunities for career development and focus on the participation of religious organisations in the community, building peace and strengthening security in the area. Constitutionally, all policies within the ministry of Education adhere to cultural diversity, in accordance with the way of life and links to the Association of South East Asian Nations (ASEAN) community, as well as the global community.

The annual budget operational plans for the development of education in the southern border provinces and adheres to government policy regarding the urgency to develop and solve the problems, to give way 'to understand and access to develop'. The strategic plan focuses on six educational strategies:

1) To improve the quality of education

2) To promote religious

3) To enhance strategies to help strengthen educational opportunities and learning throughout life

4) To promote education strategy for careers and job development and management strategy

5) To study management to strengthen stability in the guidelines as a framework for operational plan development

6) To study on the special ad hoc development zone in the southern border provinces.

For the budget to Vocational school, In 2011, the Office of the Director vocational school approved a project to create 100 million to reform the Vocational Education Commission. The budget was allocated to a project to strengthen the image of the Bureau of Vocational Education Committee, operated by the Office of Personnel and Teachers' Vocational Education. The loan budget was 20 million, and a project showing the potential of student's events, performed by the vocational college, had a loan budget of 40 million. The project was prepared according to an executive

development paradigm, with a high quality vocational education management allocated 40 million.

A Council of ministers resolution approved “15 years of high quality free school policy budget” expenses against the budget increase. In the fiscal year 2554 (2011), the Office of Vocational Education Commission was allocated a budget policy for the following list: school supplies, school uniform, books and activities to improve the quality of education. In addition, the Board of Directors of Vocational Education developed guidelines for implementing policies into practice, to cover four learners’ groups: 1) normal full time system; 2) the bilateral system; 3) the system to transfer knowledge and experience as accumulated credits; and 4) special groups, such as the disadvantaged or disabled, or people without citizenship. The total amount was about 5,417,778,500 THB for 520,000 vocational students, covering 415 vocational schools.

Some data analysis from the vocational schools 15 years free school policy are below:

1) No effect on increasing participation in vocational schools. As the normal educational system had the same policy, there was no motivation for students to turn to vocational schools. However, this policy motivated poor students who needed immediate career-based knowledge.

2) The process of obtaining the free school uniforms, books and school supplies did meet the objective. Students and parents received money to buy these necessary items.

Overall, the vocational schools free school policy eliminated school fees and expanded educational opportunities to the poor. However, there were also budget issues. These are listed below.

1) There was not enough money for school uniforms and school supplies. For example, there should be a series of training and equipment sourced only from the budget; therefore, these should be added to the budget in accordance with current economic conditions.

2) Free learning support should also encourage higher levels of access to professional certification and undergraduate students. The hill tribes’ students were

concerned that when they achieved a successful level of professional certificate, they could not study further at a higher level.

According to this information, we can claim that the Thai government targeted high education specific budgets per capita, especially for these two sample provinces. Next we will evaluate whether inequality and the poverty ratio had been improved upon, or not.

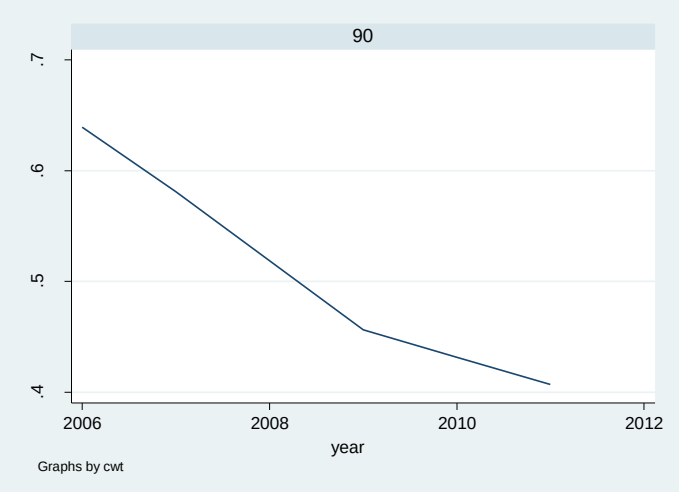


Figure 4.14 Provincial GINI Coefficients in Songkhla 2006–2011

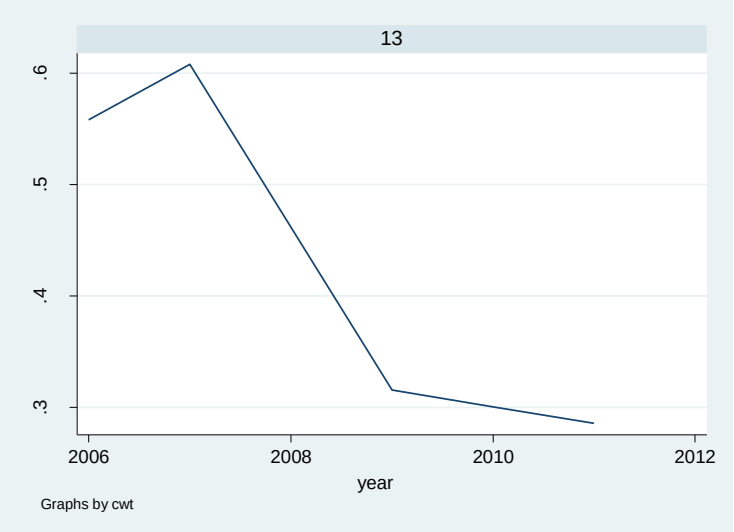


Figure 4.15 Provincial GINI Coefficients in Phatumtanee 2006–2011

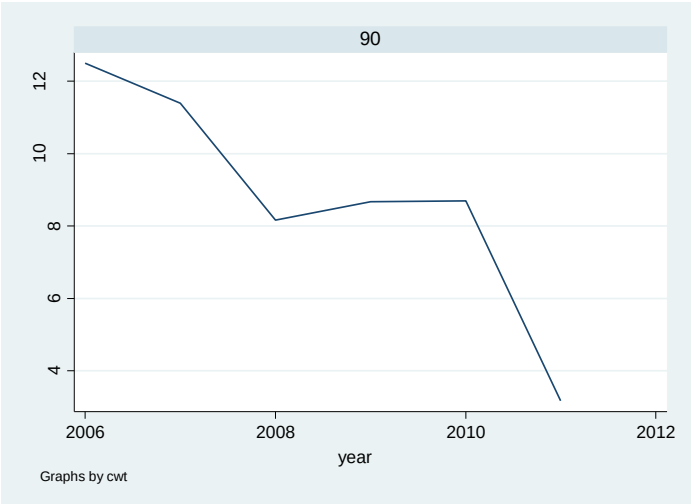


Figure 4.16 Provincial Poverty Rates in Songkhla 2006–2011

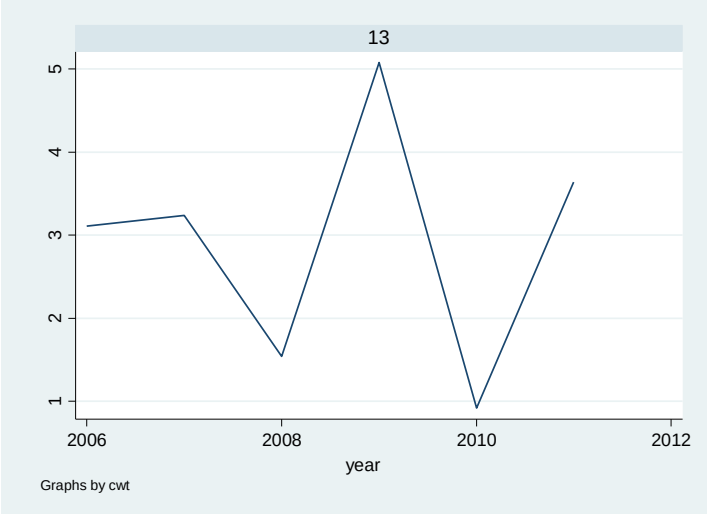


Figure 4.17 Provincial Poverty Rates in Phatumtanee 2006–2011

From the chart on provincial GINI coefficients, we can see that Songkhla had improved on inequality, aligned with the education budget per capita. For the poverty rate, it is clear that Songkla successfully lowered the rate in the same trend year as the education budget per capita allocation.

For Nonthaburi, the education budget per capita during 2006 to 2008 was not significantly changed. From 2010 to 2011, there was a sharp increase in allocation, and then we can see lower inequality. For the poverty rate, the chart shows that higher allocations reveal higher poverty. As a result, for Nonthaburi investment in education programmes might not be enough to lower the province's overall inequality.

According to this information, education per capita might also be one of effective tool to alleviate poverty from Songkhla. However, for Nonthaburi, this should lead to further study on whether the education programme has been well distributed or not.

4.2.4.2 Health

From the database, this study found that the selected province with a high health budget allocation was Nonthaburi, which had one of the government programmes that specifically invested in the project of doctors for rural area inhabitants in 2006 to 2007.

Figure 4.18 Health Budget per Capita: Nonthaburi 2006–2011

For the budget of doctors for rural area inhabitants, the project produced a doctor to rural residents (CPIRD) is a project of the ministry of Public Health to increase the number of medical personnel in rural areas or in regions with doctor shortages. This project provides opportunities to students in their homeland with

sufficient capability and energy to become a doctor, providing medical and public health in their own hometowns.

In 1994, the minister of Public Health and the minister of the University Bureau signed an agreement for cooperation in the production of medicine given to rural residents. This agreement adheres to the principles of the University Bureau to be responsible for establishing the curriculum of a bachelor's degree in medicine, with a medical education produced according to the standards of the Medical Council of Thailand. M.d., Ph.d. The principle is that the ministry of Public Health and the ministry of Education cooperate closely in producing physicians for rural residents, increasing from the academic year 2006 under medical personnel development and public health. To support the strengthening of national health structures 2009, it invests in projects for the public health sector and rural residents, and work on the form of a project for rural people.

Due to health personnel shortages across the country, there was a proposal to solve the doctor shortage in rural areas by expanding medical projects to rural residents of the ministry of Public Health (IHPP), by focusing on the medical profession in terms of quantity, quality and distribution of manpower. The severity of rural physician shortages can be seen from the number of doctors who work in small and middle community hospitals. Briefly, approximately only 12 per cent of Thai doctors work in rural areas, serving over half of the country's population.

Doctor shortages still persist throughout the country, but the Public Health ministry has ensured that medical manufacturing increased steadily every year for areas of the three southern border provinces: Yala, Pattanee and Narathiwat. Circumstances revealed that there was a shortage of doctors as high as 42 per cent. In 2005 medical requirements serviced approximately 502 people, but doctors working in hospitals were actually 290 people. The provinces lacking doctors ranked high including, Narathiwat with 201 medical personnel, but there were really only 90 people. Pattanee also had medical needs, requiring 144 medical personnel, but in reality there were only 86 people. Yala needed 157 medical physical people, and lacked 43 people.

The shortage of doctors in rural areas has been a serious problem since in the past, caused by improper distribution of medical personnel in the city. Several elements contributed to this:

1) External factors, the health system, including economic and social factors, which affect both the direct and indirect health systems, such as:

(1) Politics and inequality, especially in rural areas, which is an important condition for distributing medicine. Presently, economic policy focuses on the development of the industry, which benefits higher income people.

(2) Health insurance is based on social security. Demand for health services in urban areas ensures private hospital expansion, attracting doctors to work in the private sector.

2) Other economic and social factors such as education, communication, and the effects causing a demand for high quality, and new technology specialist services, which are concentrated in urban areas.

3) The factors within the health system or policy on the development of the public health service system. Distributing medicine should start from the distributing health services location.

If there are no health services distribution points, distributing medicine to rural areas is not fully beneficial. According to this information, can claim that the Thai government targeted high health specific budget per capita, especially for this sample province. Next we will evaluate whether inequality and the poverty ratio had been improved or not.

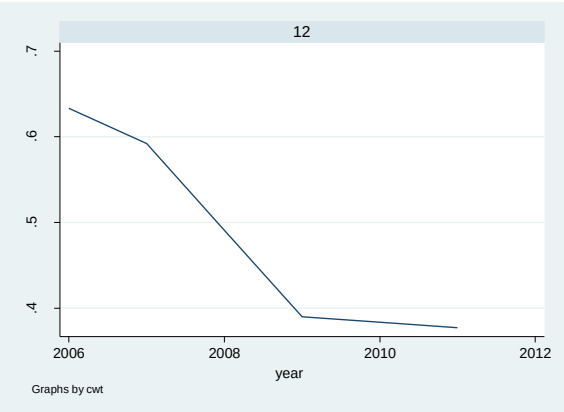


Figure 4.19 Provincial GINI Coefficients in Nonthaburi 2006–2011

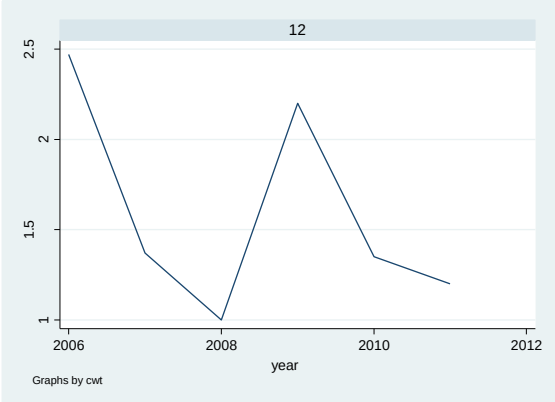


Figure 4.20 Provincial Poverty Rates in Nonthaburi 2006–2011

From the chart on provincial GINI coefficients, Nonthaburi improved in inequality aligned with the health budget per capita for most years (2006–2007, 2008–2011). After 2008, inequality was kept at a lower rate compared with the previous year. This might be the effect of past investment in health programmes having the sustainability to support a sound society and economy. For the poverty rate, it is clear that the province successfully lowered the rate almost in the same trend year as the health budget per capita allocation (2006–2007, 2008–2011)

According to this information, and supported by the empirical results, which showed that health per capita can be a part one of the tool for effectively alleviate poverty, for this sample province. the health targeting programme might be an

effective tool for the Thai government to lower the poverty rate. However, for inequality, in this sample province, it might not be a significant tool.

4.2.4.3 Social development

From the database, this study found that the selected provinces with high social development budget allocations were: Yala, Pattanee and Narathiwat, which had a higher budget to support the southern border regarding human development and elderly people; and also with Maehongsorn, with a high budget allocation to support the relief of human trafficking and elderly people.

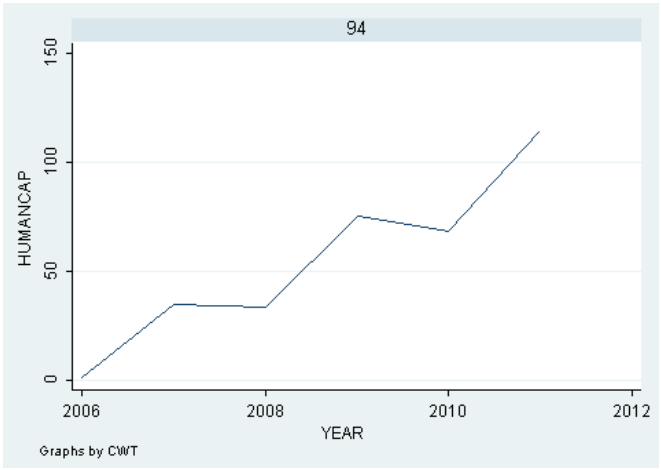


Figure 4.21 Social Budget per Capita: Pattanee 2006–2011

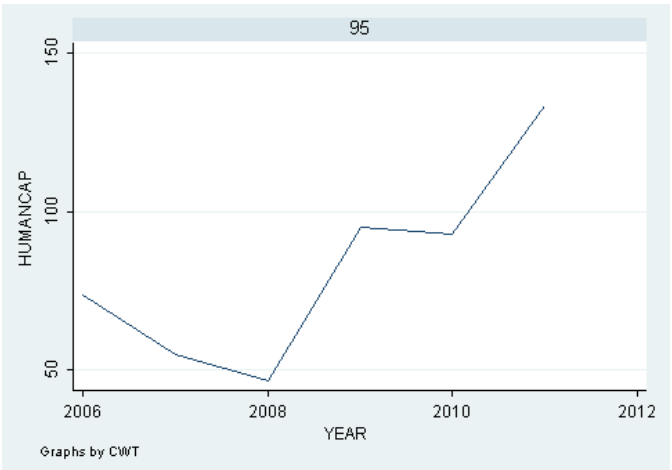


Figure 4.22 Social Budget per capita: Yala 2006–2011

Figure 4.23 Social Budget per capita: Narathiwat 2006–2011

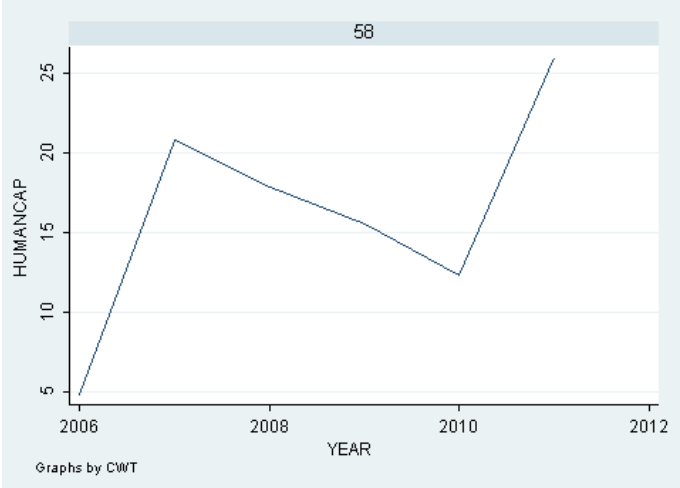


Figure 4.24 Social Budget per Capita: Maehongsorn 2006–2011

For the budget to southern border supports human development, The ministry of Social Development and Human Security, with the accordance of the government, specified that it would accelerate peace and security in the lives and properties of southern border provinces.

A special area has been developing operational plans in accordance with the urgent social development plan, as well as caring for those people who are affected.

The performance of the integrated project was 378 million THB in 2554 (2011). It covered eight projects that have been carried out to completion including:

1) Those affected by the situation of unrest in the southern border provinces, received a budget of 213.7 million THB, and budget support from a central total of 27.883 million THB. The total was 241.583 million THB.

2) A project to strengthen the knowledge of the southern border provinces by workshops educating women, received a budget 6 million THB.

3) Families in the Community Development Centre project (a project to promote and develop the potential of families) received a budget of 5 million THB. This was to establish and support community activities, and strengthen activities according to the suitability of each area.

4) A learning exchange programme to improve children's lives, with the budget amount of 5.6 million THB. This was to promote a youth boys camp for children, encouraging understanding of religious and cultural diversity.

5) A caravan project to promote learning throughout life. This would develop knowledge, creating an optimum environment for economic and social changes. The budget was 2.73 million THB.

6) Projects to promote activities that strengthen solidarity in the area (together with the potential development of the community area of the southern border provinces) received a budget of 6.0411 million THB.

7) A mobile unit project to care for those affected by unrest in the south. The budget amount was 25.1982 million THB.

8) Problem solving projects on land and housing, with a budget of 86 million THB. Disbursements on support, repair, adjustment and new housing construction.

For the budget to relieve human trafficking, presently, the problem of human trafficking is a big issue for Thailand. Likewise with the drug problem; but society still lacks awareness and the government has yet to solve the problem successfully. Human trafficking problems can be divided into three main aspects, including forced sexual services, trade issues and commercial sex. The problem of human trafficking has expanded in various industries, especially the fishing industry, along with

problems in other forms of trafficking, such as forced begging, the organ trade, and pregnancy.

The world community is now focusing on human trafficking Thailand. Some agencies monitor ongoing trafficking problems, such as the United Nations or the US, as well as developed countries. For Thailand, problem solving and remedies victims of trafficking do not progress. Reports by the US TIP (trafficking in persons) shows that "ranking of Thai surveillance is in level 2 (Tier 2 watch list) and may be classified as a level 3 in the future if there is no protection and human trafficking problems more effectively".Accordingly, the Commission on Children's Affairs, Youth, Women, Elderly people and Disabled People's Council representatives foresee the urgency of the trafficking issue. The organisation has provided policies to create better understanding of these problems, including brainstorming to find preventive actions and resolve human trafficking effectively and concretely. Problems and obstacles in the current trafficking problem in Thailand can be describes briefly as:

1) The complexity of the problem, also the action plan to solve the issues is related to multiple agencies, so the coordination of action is often delayed.

2) There are no current reliable database systems.

3) Lack of staff knowledge and understanding, as well as the motivation to perform tasks.

4) There is no intensive education and knowledge transfers for understanding the situation, or the severity of the problem.

5) Human trafficking in the type of prostitution shows a more serious situation.

6) Budgets for each ministry may continue to work elegantly and gracefully for Thai only, but not for non-Thais.

For the government budget to elderly people, at present, Thailand step into society by elderly people. In 2010, Thailand had a high proportion of elderly people (above 60 years); about 12 per cent of the total population. This will become 25 per cent in 2573, or a ratio of elderly of 4:1. According to this, the government must provide more benefits in terms of both quantity and quality, to accommodate the increasing number of elderly people. It should especially consider the burden on the

budget, preparing expenses and funding sources for supply of elderly welfare in the future, as well as finding a common approach to assist elderly welfare. The elements of the social welfare system for the elderly consist of:

1) Social services: the state provides basic services to all people, which is a benefit to elderly care, with allowances for those over the age of 60 years.

2) People social security or safety net: refers to a system that makes life assurance.

3) Social assistance: refers to a system that focuses on care and helps the disadvantaged in society under set conditions, and targeting such as elderly care allowances.

4) Partnership on a social management system: to provide more social welfare work. This is because welfare should not be the responsibility of the central government only. It should result from collaboration between different sectors such as local government, community organisations and the private sector, including activities such as promoting corporate social responsibility (CSR).

Direk Patamasiriwat (2006) studied ‘savings, welfare and public sector’ by surveying a sample of 4,984 households, and found that the average savings of households was equal to the average income of 2,897baht/month, from a total income 21,519 baht/month, equal to a 13.5 per cent savings rate. This is considered low when taking into consideration future expenses, especially after retirement from work. However, more than 40 per cent of households joined the savings group, with average periodic savings of 411 baht/month. This savings group also has various benefits to help members, such as elderly persons with disabilities and welfare costs.

Providing welfare benefits for the elderly in both basic and supplementary benefits is mainly the responsibility of the government. The ministry of Social Development and Human Security is the primary agency supporting elderly care. Almost all the burden and expense comes from the government budget in terms of social welfare basics. The government should also bear all budgets in term of tax financing, but may allow other sectors (social welfare party) to participate in the service. In some cases, certain areas could be targeted if another sector has more expertise in accessing people than the government does. Government expenditure

benefits the elderly by the different types of pension funds managed by the social welfare development centre (Department of Social Welfare and Development). For example, elderly care allowances on funeral management and activities encouraging the elderly to receive social security.

Table 4.17 below shows the government budget allocation to the elderly in 2007 to 2011, forecasting expenditure on the elderly for 2012 to 2021, revealing the increasing trend.

Table 4.20 Government Expenditure to Elderly People in 2007–2011

ประเภทสวัสดิการผู้สูงอายุ	2550	2551	2552	2553	2554
รวม	**17,885**	**19,184**	**29,790**	**40,894**	**43,972**
ประกันสังคม					
- กรณีชราภาพ	1,655	2,266	2,729	3,194	3,152 (กย)
- ค่าทำศพกรณีเสียชีวิต	778	1,011	1,026	1,102	875 (กย)
กองทุนบำเหน็จบำนาญข้าราชการ	4,649	4,962	5,224	5,252	3,937 (กย)
กรมพัฒนาสังคมและสวัสดิการ					
- ค่าใช้จ่ายความจำเป็นขั้นพื้นฐานผู้สูงอายุในศูนย์พัฒนาการจัดสวัสดิการสังคมผู้สูงอายุ	28	28	35	31	31
กรมส่งเสริมการปกครองท้องถิ่น					
- เบี้ยยังชีพผู้สูงอายุ	10,532	10,532	20,398	31,044	36,008 (กย)
- สถานสงเคราะห์คนชรา	78	77	90	99	94 (กย)
สำนักงานส่งเสริมสวัสดิภาพและพิทักษ์เด็ก เยาวชน ผู้ด้อยโอกาสและผู้สูงอายุ					
- สงเคราะห์การจัดการศพ	36	36	44	183	183
- กิจกรรมการส่งเสริมให้ผู้สูงอายุได้รับการคุ้มครองและการส่งเสริมการใช้ศักยภาพทางสังคม	48	88	108	94	83
- กองทุนผู้สูงอายุ	60	60	40	0	150

Source: Thailand Development and Research Institution, 2012: 44.

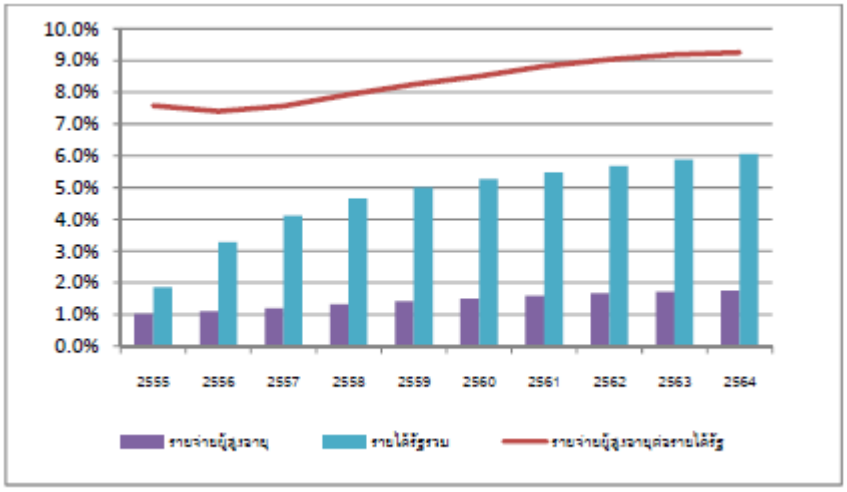


Figure 4.25 Trend of Govt. Budget Expenditure to Elderly People 2012–2021
Source: Thailand Development and Research Institution, 2012:50.

According to this information, we can claim that the Thai government has targeted high social development specific budget per capita, especially for these sample provinces. Next we will to evaluate whether inequality and the poverty ratio improved or not.

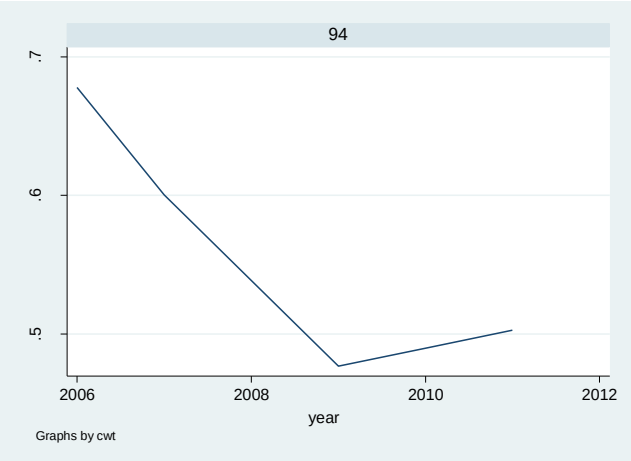


Figure 4.26 Provincial GINI Coefficients in Pattanee 2006–2011

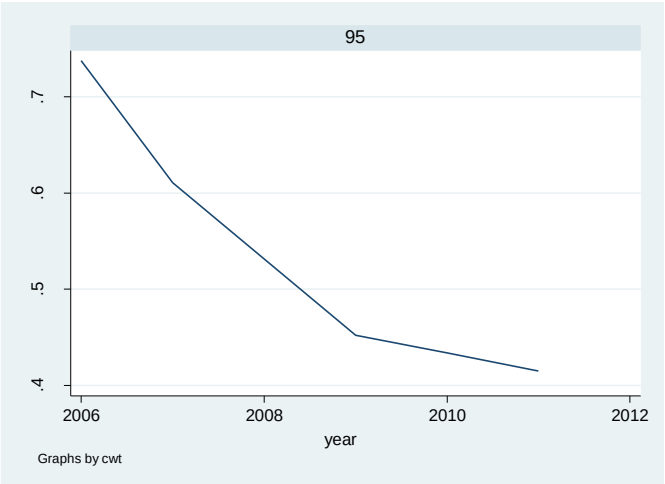


Figure 4.27 Provincial GINI Coefficients in Yala 2006–2011

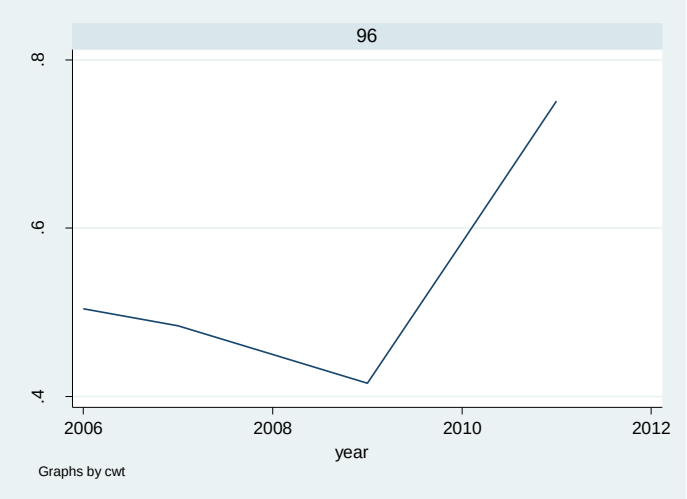


Figure 4.28 Provincial GINI Coefficients in Narathiwat 2006–2011

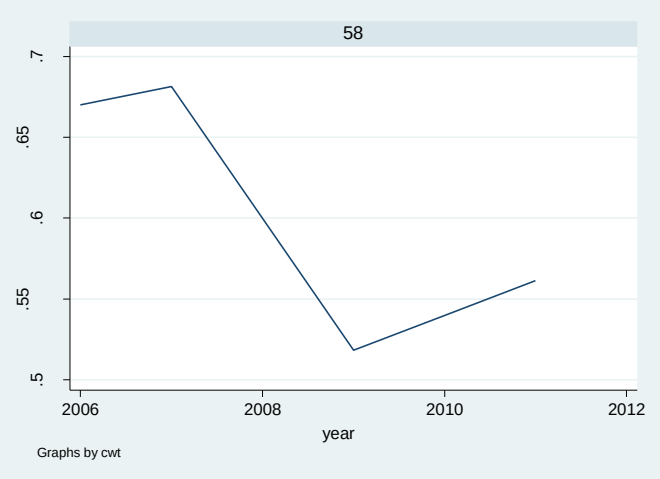


Figure 4.29 Provincial GINI Coefficients in Maehongson 2006–2011

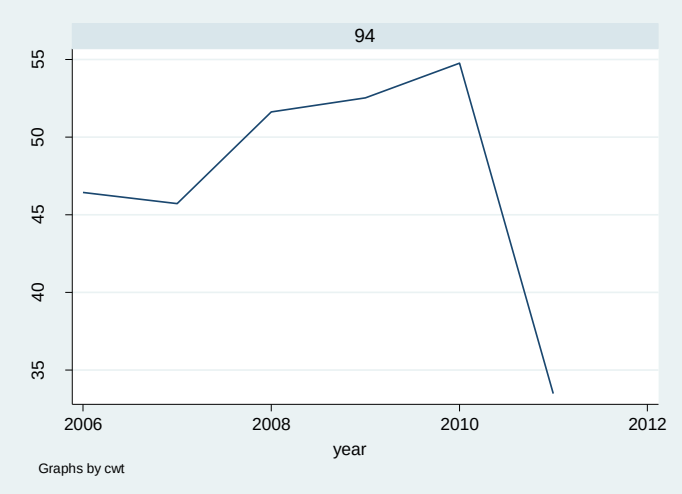


Figure 4.30 Provincial Poverty Rates in Pattanee 2006–2011

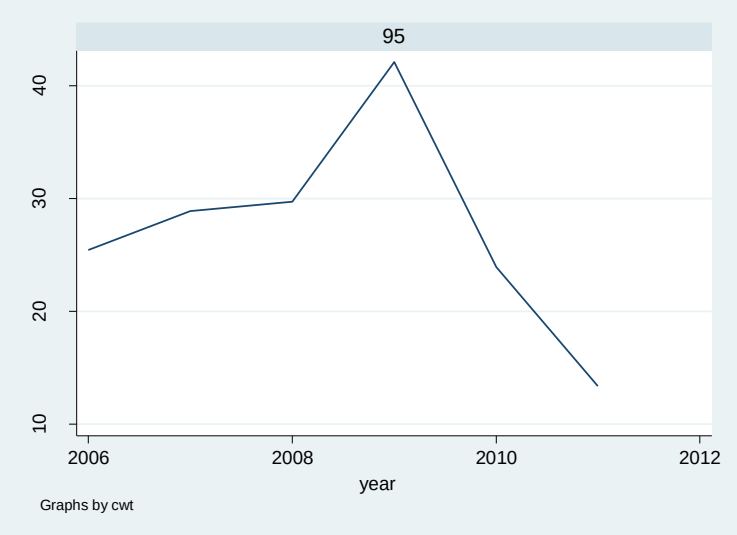


Figure 4.31 Provincial Poverty Rates in Yala 2006–2011

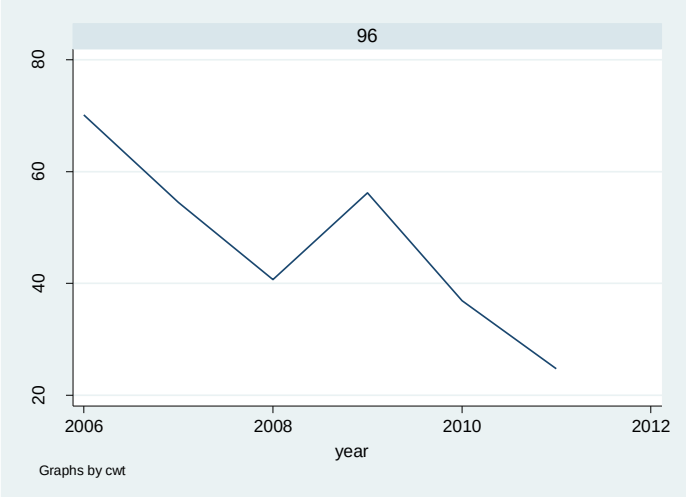


Figure 4.32 Provincial Poverty Rates in Narathiwat 2006–2011

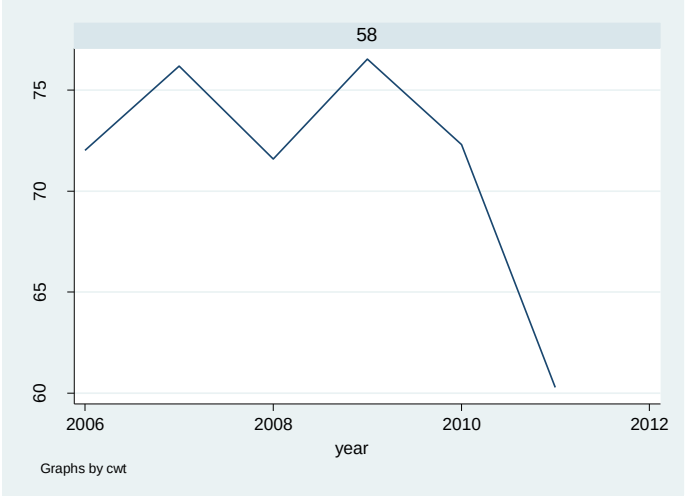


Figure 4.33 Provincial Poverty Rates in Maehongson 2006–2011

From the chart on provincial GINI coefficients, Pattanee had improved on inequality, aligned with the social specific budget per capita in most years, except during 2010 to 2011. For the poverty rate, it is clear that Pattanee successfully lowered the rate in the same trend year as the social budget per capita allocation, especially in 2010 to 2011.

For Yala and Narathiwat, the social budget per capita allocation was not in the same trend as the movement in inequality. For the poverty rate, it is clear that Yala successfully lowered the rate in the same trend year as the social budget per capita allocation, except during 2008 to 2009.

For Maehongson, the social budget per capita allocation did not align with the trend of inequality. With the poverty rate, from the chart, a higher allocation shows higher poverty.

This information for these sample provinces, social development budget might not be an effective tool to alleviate the inequality and poverty. Supported by the problems of each programme above (such as lack of expertise to access the target group, lack of intensive in education in preventing of human trafficking), the Thai government, especially the ministry of Social Development and Human Security, should focus on the more effective strategies.

CHAPTER 5

CONCLUSION

Rising income inequality and poverty are now the focus for policymakers, as these are powerful obstacles for development and prosperity. For the given average income levels, higher income inequality means higher poverty. The more unequal income distribution is, the faster the rate of growth required to meet a given reduction rate in poverty. Therefore, inequality lies at the core of stagnation circles.

High economic growth does not always ensure an improvement in income distribution and a reduction of the poverty rate; sometimes, the process of growth cannot avoid increasing inequality, at least in the early stages. Accordingly, economic interest in the role of the fiscal policy as a redistributive instrument in the short and long term is highlighted.

It is supported by Voitchovsky (2009) that in theory, inequality can both facilitate and slow down growth. Most positive tools (such as saving and investment) can be related to inequality at the top tiers of distribution, while many negative effects (such as misallocation of resources) can flow to bottom-end inequality (high inequality). As such, the final effect of inequality ultimately depends on the relative strengths of positive and negative institutional effects.

A study from Ferreira and Ravallion (2009) shows that there is a strong negative relationship between growth and change in poverty: economies with faster growth can reduce absolute poverty rapidly. However, this does not mean that inequality reductions will follow a better trend according to poverty. In developing countries, even when there is economic growth, inequality is still a crucial problem. In cases where inequality rises during the economic growth process, poverty often worsens.

As a result, many policymakers view more equal income distribution and poverty reduction as desirable goals. Apart from the principle that lower income inequality is often important for achieving greater equality of opportunities to access economic, social, and political resources, the existing income inequality is also

perceived as an outcome of unfair access to resources. Thus, unequal access is detrimental to social integration.

This paper has mainly focused on per-capita government budget allocations at the provincial level. The results show that Thai fiscal policies to alleviate income inequality and poverty were effective and pro-poor to some extent. However, some examples of special programs in Thailand were not effective in alleviating income inequality and poverty.

From the study years, we can see that pro-poor government expenditures came from the Ministry of Public Health (with the health insurance fund), the Ministry of Social Development and Human Security, and the Ministry of Interior. As well, local funds can be a part of the poverty reduction strategy.

From the summarized poverty table below, we can see that in 2006, there were 27 provinces in Thailand with poverty ratios lower than 20 or counted as non-poor provinces. This number increased over the time of this study to 57 provinces in 2011. For provinces counted as moderately poor (with a poverty ratio in the range of 20–39.99), there were 40 in 2006 and only 16 in 2011. Likewise, eight provinces were extremely poor (with a poverty ratio higher than 40) in 2006 and only three in 2011. This means that the poverty reduction program in Thailand was conducted successfully.

Table 5.1 Summary of Poverty Rate Categories in Thailand

Category	Poverty rate	Year 2006	2011
Non-poor	0–19.99	27	57
Moderately poor	20–39.99	40	16
Extremely poor	40+	8	3

For the impact on inequality, as seen with the random effect method, the results are similar to those of the pro-poor budget allocation. Government expenditures that can reduce inequality stem from public health, namely the Health Insurance Fund, which on average was 1400 THB per head, the Ministry of Social

Development and Human Security, and the Ministry of Interior. Local funds were also part of the effort to alleviate inequality.

However, considering the inequality reduction policy, some government budget allocations from this study have been shown to exacerbate inequality. These are from the Ministry of the Office of the Prime Minister and the Ministry of Agriculture and Corporative. Even the budget allocation from the Ministry of Agriculture was a bit high (an average of 550 THB per head). However, during the study years, the government focus on expanding the irrigation system did not focus directly on the poor or on solving inequality.

Neutral budget allocations were from the Ministry of Education and the Ministry of Commerce. This implies that even the government's focus on investing huge amounts in education (the average per-capita budget was 3500 THB) did not directly help the poor, and this budget may have needed to absorb other incurred costs, such as those for transportation and stationery. Likewise, the Ministry of Commerce did not effectively roll out the program of consumer pricing.

The statements above are also supported by the information that in 2011, provinces that had received a higher budget allocation were the big provinces in each region, such as Ayutthaya, Phuket, Chiang Mai, and Songkhla. However, among provinces with a low government allocation per capita (less than 11,001 THB), most were from the northeastern region. As a result, this fiscal tool might not be fully effective in terms of inequality reduction.

Sound economic and social policies help to either limit unfair income distribution or achieve its improvement and reduce the poverty rate. Using government budgets helps with income distribution and poverty reduction. If inequality is above tolerable levels, the government should target the root causes of inequality through strategies that aim to broaden opportunity, for example by expanding access to education, health, and social services.

For the current special programs that have been implemented in Thailand, the examples from this paper reveal that some can be used as government tools to alleviate inequality and poverty, but some might not.

The education per capita budget allocation to support southern border provinces might be an effective tool to alleviate poverty. However, further study is required to determine whether budget allocations to support vocational school have been well targeted.

Regarding the effect of health budget allocations per capita, the project to provide doctors for rural areas might be an effective tool to alleviate poverty and inequality. This special program has been used in Nonthaburi, where the provincial poverty ratio was lower and aligned with the health budget per capita throughout most of the study period.

Finally, even from empirical results, we can determine that the social development budget is an effective tool to alleviate inequality and poverty, but we still cannot conclude which specific programs (for example, those to support the southern border provinces, relieve human trafficking, and aid the elderly) are effective.

From this paper, another important factor has emerged, which is that the Thai government has used a far more equalized system of resource distribution, known as non-budgetary government spending, than it did in pre-study years. Currently, non-budgetary government spending also plays a role as a support mechanism for the government, especially regarding fiscal policy and income distribution. This non-budgetary government spending aims to decentralize and empower the government to take action more effectively.

The changes in inequality and poverty were not purely due to the effect of government budget allocations and each special program, so we cannot conclude that these programs were not effective. This might be because other factors have a negative effect on budget distribution and the poverty rate as a whole. Likewise, even inequality and poverty have improved, but we still cannot conclude that this was purely a result of government spending and special programs, as other factors may support these outcomes.

Some interesting points warrant further study. Firstly, when studying the implications of inequality, one should also expand the scope of the study, not just based on income but also wealth distribution, which can benefit social welfare overall.

Secondly, this study focuses only on the flow of government expenditures to each province from each ministry. This expenditure by each ministerial department does not address the problem of poverty and inequality. As a result, future studies should point out horizontal government expenditures or area-based budgeting including three possible budget channels: provinces, local administrative organizations, and citizens.

As well, in the near future, the Parliamentary Budget Office will be formed to assist parliament members with budget allocation, and equalization budgeting is likely to be a topic for reform. Finally, future studies should also expand the scope for fiscal tools, especially for taxation, which can benefit social distribution. A study from Patmasiriwat (2006) mentions that 2006 statistics show that earmarking property taxation schemes can form a part of pro-poor government spending, as they entail income redistribution from rich households to poor households and therefore a social welfare gain.

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BIOGRAPHY

NAME	Areeporn Asawinpongphan
ACADEMIC BACKGROUND	Bachelor's Degree in Economics with a major in Public Finance from Chulalongkorn University, graduated 2005
	Master of Sciences in Finance and Economics, school of Social Sciences, University of Southampton, United Kingdom, graduated 2006.
EXPERIENCES	ExxonMobil Limited, Business Analyst 2006-2008
	ExxonMobil Limited, Chemical Global Customer Services, Trader specialist 2008-2009
	ExxonMobil Limited, Chemical Global Customer Services, Process improve lead 2009-2011
	ExxonMobil Limited, Corporate Financial Services, Financial Accounting analyst 2011
	ExxonMobil Limited, Chemical Global Customer Services, Regional planning advisor 2011-2015