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หลักฐานเชิงประจักษ์จากข้อมูลระหว่างประเทศและไทย

นางสาว สวรรีย์ บุญยमानนท์

สถาบันวิทยบริการ
วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาเศรษฐศาสตรดุษฎีบัณฑิต
สาขาวิชาเศรษฐศาสตร์
คณะเศรษฐศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
ปีการศึกษา 2550
ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

INTERCONNECTION BETWEEN INCOME DISTRIBUTION AND ECONOMIC GROWTH:
CROSS-COUNTRY AND THAI EVIDENCE

Miss Sawarai Boonyamanond

A Dissertation Submitted in Partial Fulfillment of the Requirements
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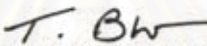
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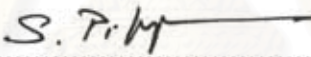
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By Miss Sawarai Boonyamanond
Field of Study Economics
Thesis Advisor Associate Professor Isra Sarntisart, Ph.D.
Thesis Co-advisor Assistant Professor Phitsanes Jessadachatr, Ph.D.

Accepted by the Faculty of Economics, Chulalongkorn University in
Partial Fulfillment of the Requirements for the Doctoral Degree



..... Dean of the Faculty of Economics
(Professor Teerana Bhongmakapat, Ph.D.)


THESIS COMMITTEE


..... Chairman
(Associate Professor Sumalee Pitayanon, Ph.D.)


..... Thesis Advisor
(Associate Professor Isra Sarntisart, Ph.D.)


..... Thesis Co-advisor
(Assistant Professor Phitsanes Jessadachatr, Ph.D.)


..... External Member
(Professor Direk Patmasiriwat, Ph.D.)


..... Member
(Associate Professor Voravidh Charoenloet, Ph.D.)

สวรัย บุญยमानนท์: ปฏิสัมพันธ์ระหว่างการกระจายรายได้และการเจริญเติบโตทางเศรษฐกิจ: หลักฐานเชิงประจักษ์จากข้อมูลระหว่างประเทศและไทย.
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การกระจายรายได้และการเจริญเติบโตทางเศรษฐกิจเป็นหัวข้อวิจัยสำคัญ ซึ่งได้รับความสนใจ และมีการศึกษากันอย่างกว้างขวาง อย่างไรก็ตาม การศึกษาส่วนใหญ่เป็นการวิเคราะห์ผลกระทบจากการเจริญเติบโตทางเศรษฐกิจต่อการกระจายรายได้ หรือเป็นการวิเคราะห์ผลกระทบจากการกระจายรายได้ต่อการเจริญเติบโตทางเศรษฐกิจ ซึ่งการวิเคราะห์หาความสัมพันธ์เชิงสาเหตุระหว่างปัจจัยทั้งสองในทางใดทางหนึ่งเพียงทางเดียวนี้อาจทำให้ได้ผลสรุปที่ไม่ถูกต้อง และไม่สามารถนำไปใช้ประโยชน์ในการวางนโยบายได้อย่างแท้จริง

การศึกษานี้เสนอการวิเคราะห์ในมุมมองที่ต่างออกไป โดยมุ่งศึกษาปฏิสัมพันธ์ระหว่างปัจจัยทั้งสองโดยใช้ทั้งชุดข้อมูลระหว่างประเทศและชุดข้อมูลของไทย ผลการศึกษาจากข้อมูลทั้งสองชุดให้ผลสรุปตรงกันว่า การกระจายรายได้และการเจริญเติบโตทางเศรษฐกิจมีปฏิสัมพันธ์กันทั้งทางตรงและทางอ้อม ในทางตรงนั้นพบว่า ความเหลื่อมล้ำทางรายได้และการเจริญเติบโตทางเศรษฐกิจมีความสัมพันธ์ในทิศทางตรงกันข้าม ส่วนในทางอ้อมพบว่า ตัวแปรทั้งสองมีปฏิสัมพันธ์ระหว่างกันผ่านปัจจัยอื่น ทั้งปัจจัยทางเศรษฐกิจ สังคม และการเมือง เช่น การศึกษา สุขภาพ การค้าและการลงทุนจากต่างประเทศ ตลาดสินเชื่อ นโยบายภาครัฐ สถาบันการเมือง ความหลากหลายทางวัฒนธรรม เป็นต้น การกำหนดนโยบายสำหรับปัจจัยหนึ่งจึงควรคำนึงถึงผลกระทบที่อาจจะมีต่ออีกปัจจัยหนึ่งด้วย

เพื่อให้เศรษฐกิจเติบโตควบคู่ไปกับการกระจายรายได้ที่เท่าเทียม การศึกษานี้จึงเสนอให้มีการเพิ่มคุณภาพการศึกษา การขยายโอกาสในการเข้าถึงบริการสุขภาพ การกำหนดมาตรฐานแรงงานที่ดี และการเพิ่มสวัสดิการทางสังคม โดยเฉพาะในกรณีของประเทศไทยซึ่งพบว่า การเก็บภาษีทางตรงที่มีประสิทธิภาพจะสามารถช่วยลดความไม่เท่าเทียมกันทางรายได้ หายที่สุด ผลการศึกษาชี้ว่าผู้วางนโยบายควรเน้นสร้างความเท่าเทียมทางกันโอกาส มากกว่าจะมุ่งสร้างความเท่าเทียมกันทางรายได้เพียงอย่างเดียว โดยเปิดโอกาสให้คนจากทุกกลุ่มรายได้เข้าถึงทุนมนุษย์และทรัพยากรได้อย่างทั่วถึง ทั้งในทางการศึกษา การบริการสุขภาพ สินเชื่อเพื่อการลงทุน ตลอดจนการมีส่วนร่วมทางการเมืองและสังคม ไม่ว่าจะภูมิหลังหรือพื้นฐานทางสังคมและเศรษฐกิจจะต่างกันอย่างไร

ภาควิชา.....
สาขาวิชา.....เศรษฐศาสตร์.....
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KEY WORD : INCOME DISTRIBUTION / INEQUALITY / ECONOMIC GROWTH / SIMULTANEOUS

SAWARAI BOONYAMANOND: INTERCONNECTION BETWEEN INCOME DISTRIBUTION AND ECONOMIC GROWTH: CROSS-COUNTRY AND THAI EVIDENCE. THESIS ADVISOR: ASSOC. PROF. ISRA SARNTISART, THESIS COADVISOR: ASST. PROF. PHITSANES JESSADACHATR, 142 pp.

The relationship between income distribution and economic growth has been one of the most active issues in development economics. While some studies interest in the effect of economic growth on income distribution, others focus on the effect of income distribution on economic growth. By analysing the inequality-growth relationship only in one dimension without taking into consideration another plausible dimension, therefore, can be misleading especially in the policy implication point of view.

This study extends previous studies by investigating both causalities simultaneously and indentifying the ways in which income inequality and growth interact in many development aspects. Using both cross-country and Thai datasets, income inequality and economic growth are found to be negatively related in both analyses. Moreover, they can indirectly interact with one another through other economic, social and political factors such as education, health, investment, international trade, credit market, fiscal policies, political institutional environment and cultural diversity. Through these underlying factors, the possible trade-offs between improving income distribution and good economic performances might occur.

This study suggests that in order to reach an economy where economic growth is steadily enhanced and income distribution is more equitable, a government should improve the quality of schooling, provide public access to health services, and strengthen labour standards and social-safety net. In the case of Thailand, the inequality problem can be alleviated through direct taxation. More importantly, policy makers should provide all individuals similar chances in lives to be able to attain higher education, acquire better health care, access to credit market, and to become politically and socially active, regardless of their predetermined backgrounds.

Department:-.....

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Academic Year: ...2007.....

Student's Signature: 

Advisor's Signature: 

Co-advisor's Signature: P. Jessadachatr.....

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CHAPTER I

INTRODUCTION

1.1 Significance of the Problem

Several decades ago an unequal distribution of income among different groups of a society was perceived as an unavoidable consequence of economic growth. The evolution and pattern of income distribution in the course of economic growth were the main concerns of many development researchers during that period. As pioneered by Kuznets (1955), the relationship between the level of economic development and income inequality has been hypothesised to take a form of an inverted U-shaped. That is, as a country develops, income inequality should initially rise, stabilise for a while and eventually fall.

It is not until recently that the functional aspect of income distribution and particularly its roles in a country's economic development have been realised and taken into account. This is because persistent inequalities imply that some unfortunate groups of society tend to have consistently inferior opportunities than their fellow citizens throughout their lives. Increasing numbers of studies have been proposed in an attempt to investigate the impact of income distribution on economic growth. Whether unequal income distribution has a positive or negative effect on growth is a matter of controversy. On the positive side, income disparity allows higher-income class to save and invest more. In the light of this view, wide inequality is a necessary condition for maximum economic growth. On the negative side, differences in income cause resources to be misallocated and create negative externalities that are corrosive to society. Greater inequality therefore may hamper economic growth to accelerate. By employing of higher-quality distributional datasets recently made available, empirical studies are increasingly lending support to the view that income inequality is harmful to economic growth.

World Development Report (2006) puts forward a striking example of inequality within South Africa to emphasise the significance of the issue. Two hypothetical African children, Nthabiseng and Pieter, were born on the same day. Nthabiseng is black, born to a poor family in a rural area whose mother had no formal schooling. Pieter, on the other hand, is white, born to a wealthy family in Cape Town whose mother completed a college education. On the day of their birth, neither of the children could be responsible for their family circumstances. But the statistics suggest that those predetermined background variables make a major difference for the lives that they will lead. Nthabiseng is likely to be poorer than Pieter throughout her life in every aspect - economically, socially, and politically.

The adverse effects of such inequalities on a country's development are even exacerbated because they tend to reproduce themselves over time, and tend to persist through generations, a situation which is known as inequality traps. These differences can be considered as fundamentally unfair, especially when the individuals who are affected cannot do anything about them. They are also likely to lead to wasted human potential and missed development opportunities (World Development Report, 2006).

Up until now, different analytical methodologies as well as various types of income inequality indicators, across time and across countries, have been used to investigate both causal links between income distribution and economic growth. For the most part, however, the two literatures have been proceeded independently of one another.

This study therefore attempts to extend previous studies by combining the causality running from growth to income distribution and the causality running from income distribution to growth and analysing them simultaneously. Amid the growing importance of the inequality-growth simultaneous relationship, as far as it is concerned, there are only two studies that investigate the bi-directional inequality-growth relationship using a similar approach to this study. In those studies, income distribution and economic growth are examined simultaneously, nevertheless, the underlying

interconnection between inequality and growth seems to be overlooked. Unlike the two previous studies, this study suggests that the distribution of income and economic growth not only directly affect each other, but they also indirectly impact one another through other important factors. The potential channels through which income distribution and economic growth can interact thus are focused so that development policies can be efficiently drawn. In addition, in order to reflect more reality of the current situation on an international ground, this study considers economic, political and social factors along with larger dimensions of globalisation in detail.

More importantly, the complex interconnection between income distribution and economic growth sometimes varies from country to country due to some specific characteristics and backgrounds. While the previous analyses are based only on the multi-country basis, this study takes another step further by including the country-specific analysis in which Thailand is taken as a case study. This incorporation can be considered as the first attempt to deeply investigate the inequality-growth simultaneous relationship in Thailand.

1.2 Objectives of the Study

In addition to exploring whether there are any simultaneous relationship between income distribution and economic growth, the main purpose of this study is to provide a comprehensive framework that is possible to identify the ways in which inequality and growth interact in many aspects of development. The potential channels through which income distribution may affect economic growth as well as those channels through which economic growth may affect income distribution are therefore determined at the same time.

This study aims to answer the following questions: How do disparities in opportunity translate into different abilities to contribute to the growth process? At the same time, how does the stage of development a country lies in influence the existing distribution of income? Through other underlying factors, would there be any trade-offs

between equity and economic growth? Or in some respects, are they indeed complementarities?

1.3 Scope of the Study

In attempting to examine the interconnection between income distribution and economic growth thoroughly, this study begins by analysing any potential factors that are likely to involve in the inequality-growth relationship. These factors include economic, political as well as social factors. In doing so, the globalisation aspects are also focus in order to better reflect the world economy where countries are deeply integrated.

To further explore the relationship between income distribution and growth, this study tests such bi-directional relationship empirically by employing the econometric methods. In the first part, the cross-country dataset of 188 countries from around the world, measured from 2000 – 2004, are used to portray some regularities across countries. In the second part, the Thai panel dataset are employed to take into consideration any country-specific features that can have important inferences for policy implications in Thailand. These data cover 5 regions, namely Bangkok Metropolis, Central, North, Northeast and South, and 11 time periods, measured in every other year from 1986 – 2006.

1.4 Expected Benefits of the Study

In the case where the distribution of income and the growth process are simultaneously correlated and can affect one another indirectly through other factors, earlier studies that investigate inequality and growth independently can lead to misleading empirical results and policy implications. This is because development policies that aim at improving one outcome may end up with worsening the other. That is, indirect interconnection and possible trade-offs between income inequality and economic growth are needed to be carefully assessed in designing effective policies.

By examining the simultaneous inequality-growth relationship and the potential underlying factors between them in detail, this study can provide insightful information to help alleviate the inequality and growth problems that have been markedly concerned. To be more precise, the findings from this study would help policy makers in searching for policies that can improve the distribution of income and, at the same time, can also contribute to steady growth and economic development.



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CHAPTER II

LITERATURE REVIEW

For both analytical and quantitative purposes, the concepts of income distribution and growth theories are briefly outlined in this chapter. Earlier studies on the effects of growth on income distribution as well as those on the effects of distribution on growth are also reviewed along with the potential channels through which these two factors may interact. In the end, the two recent studies set out to test for the simultaneous inequality-growth relationship are fully discussed.

2.1 Income Distribution Concepts

The notion that income distribution in a society should not be widely diverged can be traced back since the early ages. Influential scholars have stated that in a society where the majority of the people are poor and miserable, that society cannot be prosperous and healthy. Economists therefore have long been earnestly investigating on this issue.

Two categories of income distribution usually distinguished by researchers are the distributive factor share or functional distribution of income and the personal or size distribution of income. The main difference between the functional and the size income distribution is that, whereas the former interests in sources of the income individuals or households earned as production factors, the latter interests in the total income they received. Figure 2.1 visibly illustrates such differences.

The functional distribution of income describes how income is generated from the production process. That is, it deals with the returns to different factors of production such as wages to labour of different skills, rents to land owners, and profits to owners of capital equipment of various kinds. On the contrary, the size distribution of income depicts how different categories of income are distributed to individuals or households in a society. It involves income flows to individuals or households who own factors of

production. Since inequality measures normally used throughout the literature are based on the size distribution of income, this study thus also focuses on this category of distribution.

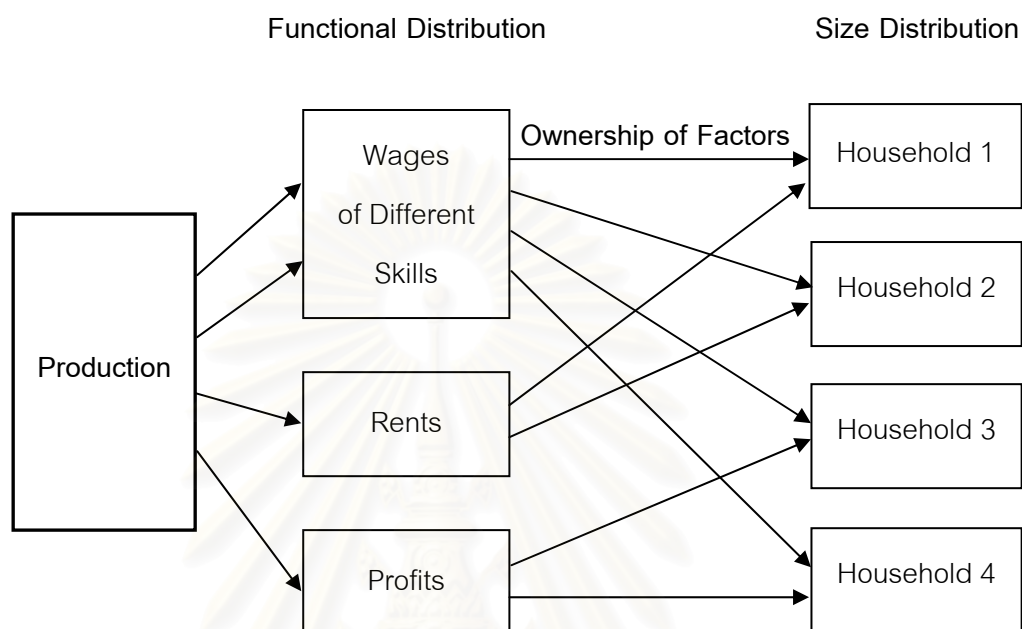


Figure 2.1 Functional and size distribution of income

One common measure of income inequality is the income share of population group. This can be obtained by dividing the population into successive quintiles, deciles, or percentiles according to their income levels and then determining what proportion of the total national income is received by each income group. For example, the ratio of the income share received by the top 20 per cent to the bottom 40 per cent of the population, which is sometimes referred to as the Kuznets ratio, can be used as a measure of income inequality between the two extreme groups in a country (Todaro and Smith, 2003).

Another intuitive and useful income inequality index which provides a graphical representation of the degree of inequality in a country is the Lorenz curve. The Lorenz curve shows the actual quantitative relationship between the percentage of income recipients and the percentage of the income they received during a given period. It can

be constructed as illustrated in figure 2.2. The horizontal axis represents the cumulative percentage of population ordered from lowest to highest income and the vertical axis represents the cumulative percentage of total income accruing to each cumulative percentage of population.

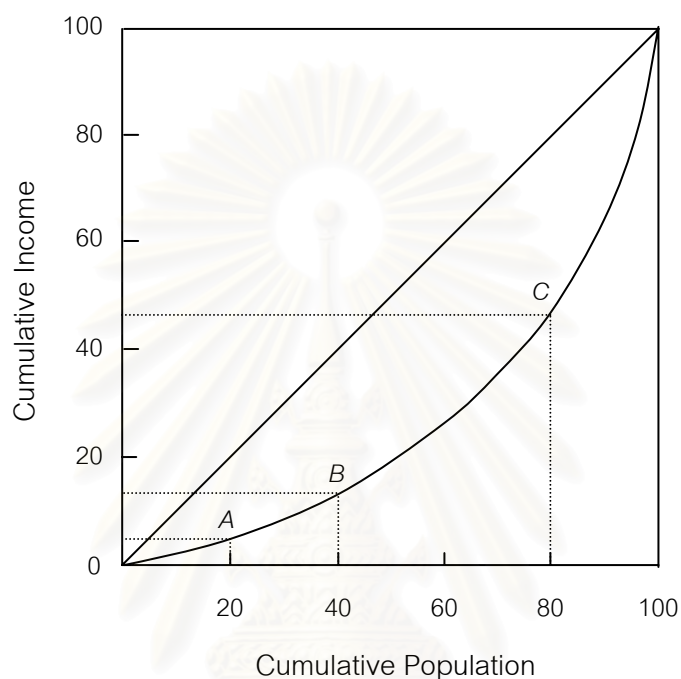


Figure 2.2 The Lorenz curve

A 45-degree line drawn from the lower left corner to the upper right corner of the square represents perfect equality in the size distribution of income: each income recipient receives $1/n$ th of the total national income, where n is the population size. In contrast, if the income distribution is perfectly unequal, that is, only one person receives all the income while everyone else does not receive anything, the Lorenz curve would lie along the bottom horizontal and right-hand vertical axes. There are no other countries that exhibits either perfect equality or perfect inequality in its distribution of income, any Lorenz curves for different countries will lie somewhere to the right of the 45-degree line. In figure 2.2, point A shows that the bottom 20 per cent of the population receives only 5 per cent of the total income, point B shows that the bottom 40 per cent of the population receives 16 per cent of the total income, and at point C, 80 per cent of the population

receives only 47 per cent of the total income. It can be, therefore, concluded that, the greater the degree of inequality, the further the Lorenz curve from the 45-degree line would be.

Despite the fact that the Lorenz curve does provide a clear picture of the overall income distribution in a country, researchers are often interested in summarising inequality by a number since it is more concrete and quantifiable than a picture. Aggregate inequality measures such as the Gini coefficient could also be used to represent the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution. It is the most popular and widely used numerical measure of income inequality in the empirical literature. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the 45-degree line.

According to Lerman and Yitzhaki (1994), the Gini coefficient is calculated by:

$$GINI = \frac{2Cov[y_i, F(y_i)]}{\mu_y} \quad (2.1)$$

Individuals are ordered by their income levels, from the lowest to the highest income. y_i is income of individual i , $F(y_i)$ is the cumulative distribution function of y_i , μ_y is the means of income and $Cov[y_i, F(y_i)]$ is the covariance between y_i and $F(y_i)$. The Gini coefficient ranges from 0 to 1, while 0 represents perfect equality, a situation in which each individual has equal income, an index of 1 implies perfect inequality, a situation in which one individual has all the income. That is, the higher the Gini coefficient, the higher the inequality of income distribution will be.

2.2 Economic Growth Theories

In order to understand the inequality-growth relationship clearly, the determinants of economic growth should be closely examined. Main theories of economic growth are therefore reviewed in this section. Nevertheless, to concentrate on intuitive ideas behind such theories, only simplified versions would be presented here without unnecessary details.

2.2.1 The Harrod-Domar Growth Model

In the late 1940s, Harrod (1948) and Domar (1946) concurrently developed growth models which together later known as the Harrod-Domar model. The Harrod-Domar model is one of the earliest and simplest mathematical models in explaining determinants of economic growth. It links the growth rate of the economy to three variables: the ability of the economy to save and invest (s), the amount of capital required to produce a unit of output (v) and the rate at which capital depreciates (δ). The overall rate of growth can be obtained by:

$$\frac{Y'(t)}{Y(t)} = \frac{s}{v} - \delta \quad (2.2)$$

While growth is positively related to the savings rate, it is negatively related to the capital-output ratio and the rate of depreciation. An increase in savings and investment increases the rate of economic growth in the sense that it allows the next periods cycle to recur on a larger scale. On the other hand, an increase in the use of capital relative to output reduces growth. This is because the need for more capital to produce a given level of output means reduced efficiency in the use of capital. An increase in depreciation also reduces growth since it reduces the accumulation of new capital.

Despite its simplicity, many researchers cast doubt on the Harrod-Domar model regarding the model assumptions on the savings rate and the capital-output ratio. They

argue that these variables may not be exogenous to economic growth, but may be endogenously determined. Furthermore, since it does not take into account another crucial factor of production – labour – the effect of population growth has to be excluded.

2.2.2 The Neoclassical Growth Model

Taking into account the critique that the capital-output ratio used to predict a growth rate in the Harrod-Domar model may itself be affected by the growth process, Solow (1956) and Swan (1956) thus endogenise the capital-output ratio and construct a more elaborate formulation of the link between capital and output. The central argument is that technological progress is the only source of sustained per capita output growth. Since the rate of technological progress is given exogenously, the Solow-Swan neoclassical model is sometimes called an exogenous growth model.

There are three inputs in this model – capital (K), labour (L), and knowledge or technological progress (A) – all of which are combined in order to produce output (Y). Capital and labour are fully employed and are paid their marginal products. The production function is assumed to be the Cobb-Douglas production function with constant returns to scale and diminishing returns to capital. The production function at time t is given by:

$$Y(t) = K(t)^\alpha [A(t)L(t)]^{1-\alpha} ; 0 < \alpha < 1 \quad (2.3)$$

A is an exogenous determined productivity parameter that reflects the current state of technological knowledge and grows at the constant exponential rate g . Labour is also an exogenous parameter that grows at the constant exponential rate n . The effective supply of labour (AL) thus grows exponentially as the sum of population growth and technological progress rates $n + g$. By the assumption that production factors are paid their marginal products, α can be interpreted as the share of capital in the total national income and $(1 - \alpha)$ can be interpreted as the share of labour.

The production function in equation (2.3) can also be rewritten as $y(t) = k(t)^\alpha$. Whereas $k(t)$ is the capital stock per unit of effective labour ($k = K/AL$), $y(t)$ is the level of output per unit of effective labour ($y = Y/AL$). The dynamics of k hence are governed by

$$\begin{aligned} \dot{k}(t) &= sy(t) - (n + g + \delta)k(t) \\ &= sk(t)^\alpha - (n + g + \delta)k(t) \end{aligned} \quad (2.4)$$

This is the key equation of the Solow's model. It indicates that the rate of change of the capital stock per efficiency unit is the difference between the actual investment and the break-even investment, which is the amount of investment that must be done to keep k at its existing level. In contrast to the Harrod-Domar model in which the capital-output ratio is exogenously fixed, the capital-output ratio in this model is an endogenous variable, which gradually adjusts over time and ultimately reaches the long-run steady-state growth path, which once attained, it will remain constant.

Since $\dot{k}(t) = 0$ and $\dot{y}(t) = 0$ in the steady state and by definitions that $k = K/AL$ and $y = Y/AL$, in order to keep k and y constant in the long-run, K and Y have to grow at the rate of AL , which is $n + g$. K/L and Y/L hence have to grow at the rate of A , which is assumed to be the same for all countries and equals to g .

$$\begin{aligned} \frac{\dot{Y}(t)}{Y(t)} &= n + g \\ \frac{\dot{Y}(t)/L(t)}{Y(t)/L(t)} &= g \end{aligned} \quad (2.5)$$

As for the transitional dynamics, as long as the economy begins close enough to the steady-state k^* , the lower the initial capital stock $k(0)$ lies below k^* , the higher the growth rates of K/L and Y/L will be. On the other hand, the higher the initial capital stock $k(0)$ lies above k^* , the lower the growth rates will be. This rapid or stagnant growth period will continue until an economy finally reaches its steady state, henceforth it will grow at rate g .

The economic logic of this dynamic analysis is straightforward. When capital is scarce, it is very productive. National output will be large relative to the capital stock. This induces people to save more than necessary to keep up with population growth, productivity gains, and capital wear and tear. As a result, the capital stock and output correspondingly rise. In this process, however, output increases more slowly than capital because of diminishing returns to capital. The capital-output ratio thus increases, but at slower and slower rates and eventually stops when the long-run growth path is reached. Along this path, output and capital will grow at the same proportional rate as the effective labour due to the assumption of constant returns, whereas output and capital per worker will grow at the exogenous rate of technological progress – the rate at which the productivity of labour increases. Since knowledge is assumed to flow freely across countries, technological know-how is the same for all countries.

In sum, the most basic proposition of the neoclassical growth model is that, although the savings rate, the rate of population growth, and the depreciation rate are parameters that determine the steady-state growth path, they have only temporary effects on the growth rate of output per capita. In the long run, it is only the rate of technological progress that affects the economic growth rate indefinitely. That is, in order to offset the dampening effect of diminishing returns to capital and to sustain a positive growth rate of output per capita in the long-run, there must be continual advances in technological knowledge in the form of new goods, new markets, or new processes (Aghion and Howitt, 1998). Since technological progress “were outside the purview of pure economics and thus outside the reach of economic policy, economic growth came to be widely seen as exogenous in the long run from an economic point of view, and hence immune to economic policy, good or bad, among other things” (Gylfason, 1999, p. 27). Nevertheless, one should be a little wary of the distinction between a growth effect and a level effect in practice. A level effect might be large and enduring, thus be worthy of attention even if the growth rate is unchanged in the steady state.

2.2.3 The Endogenous Growth Model

Since the 1980s, the inability of the neoclassical growth model to answer central questions about economic growth has caused many researchers to seek for a new thinking. Thus, a new theory of growth emerges. Endogenous growth theory purposes alternative perspectives to those of the neoclassical growth theory in that the long-run growth rate of output per capita is determined within the model rather than by an exogenous technological progress. The natural extension is thus to explicitly interpret the effectiveness of labour (A) as knowledge and formally model the evolution of it over time rather than to take it as given (Romer, 2001).

There are two major strands of endogenous growth model which offer different views concerning how knowledge is produced and what determines the allocation of resources to knowledge production. The first is a simplified version of the models of research and development (R&D) and growth developed by Romer (1990) and Grossman and Helpman (1994). In these studies, the R&D sector is introduced and the production function of new knowledge is set up. Suppose that an economy has a stock of labour L (including skilled labour in the form of human capital) that must be allocated between two sectors: a conventional goods sector where output is produced and the R&D sector where additions to the stock of knowledge are made. There are constant returns to the produced factors of production – capital and knowledge – in both sectors. The production function for output is given by:

$$Y(t) = K(t)^\alpha [(1-b)L(t)A(t)]^{1-\alpha} \quad (2.6)$$

Where b represents a fraction of the labour force devoted to the knowledge-producing sector and $(1 - b)$ represents a fraction devoted to the goods-producing sector, both of which are exogenous and constant.

In the R&D sector, new knowledge is produced from two sources: the number of labour engaged in research (bL) and the existing stock of knowledge (A). The production function for additional knowledge is:

$$\dot{A}(t) = BbL(t)A(t) \quad (2.7)$$

Where B is a positive constant. Like the Solow model, the proportion of output saved s is taken as a constant and exogenously given parameter. However, depreciation is set to zero for simplicity. Equation (2.7) implies that the stock of knowledge grows at rate $BbL(t)$. If b is fixed, output and capital stock must grow at a rate that equals the rate of accumulation of knowledge plus the rate of population growth:

$$\frac{\dot{Y}(t)}{Y(t)} = BbL(t) + n \quad (2.8)$$

Output per capita growth thus is

$$\frac{\dot{Y}(t)/L(t)}{Y(t)/L(t)} = BbL(t) \quad (2.9)$$

If population growth is positive, knowledge grows continuously and so does output and capital. An economy exhibits ever-increasing growth rather than convergence to a steady state. On the other hand, if population growth is zero, knowledge grows steadily at rate BbL . This means that the R&D model is similar to the Solow-Swan model with $n = \delta = 0$ and with the rate of technological progress g equals to BbL (Romer, 2001). Since there are no population growth, output and capital stock will also grow at this rate in the long-run steady state.

In sum, the long-run growth rate of output per capita in the R&D model is endogenously determined by the number of labour put to work in R&D. It can be

increased by devoting more labour to the production of knowledge in the R&D sector, but growth nevertheless remains unaffected by changes in the savings rate.

How b is actually chosen depends on a complex set of factors, for example, government policies, private incentives, and the degree of patent protection. This leads Ray (1998) to write, "...perfect competition implies that freely available new knowledge is costlessly disseminated, but then new knowledge for economic profit would not be produced. It follows that theories that rely on a deliberate allocation of resources to R&D must allow *some* monopolistic power, however temporary" (p. 111).

Research and development is not the only source of technological progress. The second model in which technological progress and hence growth are endogenous concentrates on what is called learning-by-doing. The accumulation of knowledge occurs in part not as a result of deliberate efforts, but as a side effect of conventional economic activity (Arrow, 1962; Romer, 1986). Let output be produced by capital, labour, and technology as before:

$$Y(t) = K(t)^\alpha [A(t)L(t)]^{1-\alpha} \quad (2.10)$$

In the simplest case where learning-by-doing is the source of technological progress, the rate of knowledge accumulation depends not on the fraction of the economy's resources engaged in R&D, but on how much new knowledge is generated by the production of new capital. Technological know-how is hence tied to capital:

$$A(t) = BK(t)^\theta \quad (2.11)$$

Of particular interest is a linear growth model with θ equals one, whereas population growth and depreciation rates equal zero. By substituting equation (2.11) into equation (2.10) above yields a production function with constant returns to capital which is also known as $Y = AK$ model:

$$Y(t) = EK(t) \quad (2.12)$$

Where $E \equiv B^{1-\alpha} L^{1-\alpha}$ reflects efficiency. Output thus depends solely on the capital stock and the efficiency with which it is used in production. Noting that the capital-output ratio turns out to be a constant as assumed by Harrod and Domar because E is constant. Since $\dot{K}(t) = sY(t)$, the dynamics of K are given by:

$$\dot{K}(t) = sEK(t) \quad (2.13)$$

This equation shows that capital grows steadily at the rate sE . Because both knowledge and output are proportional to capital stock, they also grow at the same rate as capital:

$$\frac{\dot{Y}(t)}{Y(t)} = sE \quad (2.14)$$

Endogenous technology makes economic growth also endogenous. Growth is now depended on the level of savings and efficiency, not driven exogenously by technological progress. Higher savings rate and higher efficiency lead to higher output growth through the accumulation of capital: an increase in capital raises output not only through its direct contribution to production, but also by indirectly contributing to the development of new ideas and thereby making all other capital more productive (Romer, 2001).

It is worth mentioning that all of the models outlined above assume that the households want to save an exogenously fixed proportion of their income. Although this may be justified at least as a first approximation, there are in fact several reasons to believe that the rate of savings may itself be influenced by the overall level of per capita income. As Ray (1998) specifies, there should be some tendency for the savings rate to significantly rise as an economy moves from very low to middle-income levels. Nevertheless, when an economy moves to even higher levels of income, the effect on

the savings rate is more ambiguous. This proposition hence “creates a tendency over time for the growth rate of a country to alter in a way that mirrors the movement of the savings rate with income” (Ray, 1998, p. 59), which is further discussed in the two following section.

2.3 The Kuznets Curve Hypothesis

The earliest attempt to correlate the presence of income inequality with economic growth is the hypothesis formulated by the Noble laureate Simon Kuznets (1955). In his presidential address to the American Economic Association fifty years ago, Kuznets suggests that, in the early stages of economic growth, inequality in income distribution tends to increase, whereas in the later stages it tends to decrease.

With data limitations, he does not set out any formal theory to explain this hypothesis, but instead he presents historical experience of a small set of developed and developing countries by using the income share of percentile groups of the population as a measure of income inequality. He finds that developing countries, in general, tend to possess higher degrees of inequality than their developed counterparts. In addition, Kuznets also produces some numerical examples showing that due to economic structural changes, the distribution of income would be worsen in the early stages of economic growth, but ultimately would be improved in the later stages. This finding establishes the inverted U-shaped relationship between the level of economic development and income inequality as shown in figure 2.3.

This seems to be the case that economic development is fundamentally a sequential and uneven process. Instead of everybody benefiting at the same time, the process appears to favour certain groups first and leave the other groups to catch up later. In the initial phase, inequality widens, but later on as everybody else catches up, inequality falls.

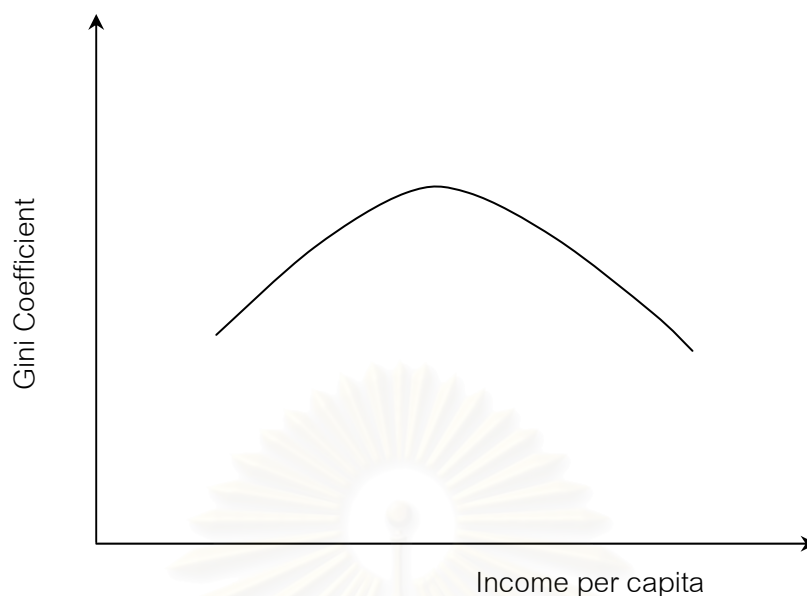


Figure 2.3 The Kuznets curve

Up to the 1970s, the Kuznets curve was regarded as more than a central tendency; rather, it was seen as a law of economic development. Rising inequality was believed to be a necessary condition accompanied economic growth. In Fields (2001)'s words, "it was not the empirical presented by Kuznets that made this work classic... It is, rather, that he first articulated what he thought was the primary mechanism by which growth affects income inequality" (p. 35).

Following Kuznets's papers, the literature goes in two directions. One is to add to the empirical base. Another is to develop theoretical models that would support the hypothesis and generate an inverted-U pattern.

There are vast empirical literatures on the Kuznets curve hypothesis. However, owing to the scarcity of time-series data on income distribution for most countries, earlier studies attempting to test the effects of economic growth on income inequality are cross-sectional in nature. Examples of such studies are Oshima (1962), Adelman and Morris (1973), Paukert (1973), Chenery and Syrquin (1975), Cline (1975), Ahluwalia (1976), Ahluwalia et al. (1979), Bourguignon and Morrisson (1990), and Anand and

Kanbur (1993a, b). The findings from these studies together give a strong support for the Kuznets curve hypothesis.

Nonetheless, there are several reasons to be sceptical of such findings. Firstly, the data exhibit too much variation to support the Kuznets curve hypothesis as an ironclad law of economic development. The level of per capita income alone can explain only some part of the observed variation in inequality from country to country.

Secondly, the cross-sectional methodology may not be the preferred one in analysing the hypothesis. Whilst there may be considerable variation in income, cross-sectional analysis may not be appropriated in explaining a large variation in income inequality. Countries do differ in various ways. Pooling different countries and running a regression is implicitly assumed that all countries have the same inequality-growth relationship. Beside economic differences, historical, physical, regional, racial, and religious heterogeneities across countries should not be overlooked.

Thirdly, the Kuznets curve found in the cross-sectional studies could be just an artificial outcome driven by the so-called Latin American effect. This stems from the fact that the middle-income range in cross-country data is dominated by countries with high inequality in income distribution. Most of these developing countries are found in Latin American, the region that traditionally has the highest average level of inequality in the world. Such factors believed to cause such inequality trend in Latin American countries are a poor distribution of land, an unequal distribution of skills, a not very well-integrated economy and cultural diversity (Iglesias, 1998).

To test this argument, an econometric method that allows for the individuality of each cross-sectional unit should be used. It is found that the inverted-U pattern disappears once the Latin American countries are controlled for (Fields and Jakubson, 1994; Deininger and Squire, 1998; Fields, 2001). This lead Fields (2001) to writes "... the inverted-U pattern in the cross-section has nothing to do with growth per se; what it has

to do with is the fact that for particular historical, political, and cultural reasons, Latin American countries have higher inequality than do other developing countries” (p. 45).

These recent studies cast further doubt on the hypothesis of inverted U-shaped relationship between a country’s economic growth and its distribution of income. In addition, as more reliable datasets of multiple observations per country are available, what seems to be the most appropriate and direct approach to test the Kuznets curve hypothesis would be a time-series analysis.

As Bruno et al. (1998) point out, “to avoid confusing the effects of independent country-specific characteristics (initial conditions) with those of intertemporal changes of policies or economic conditions, argument for or against the existence of a Kuznets process should ideally be based on time-series evidence” (p. 120-121). A time-series analysis looks into a single country and closely follows it through time. Not only do they shed more light on the evolution of income distribution, but they are also more likely to be comparable in terms of data quality than are cross-sectional data. Hence, it is a useful tool for studying secular trends and forecasting purposes. Studies based on time-series data are, for example, Lindert and Williamson (1985), Oshima (1991), Fields and Jakubson (1994), and Deininger and Squire (1998).

When countries are examined separately, the relationship between income inequality and economic development does vary. From a large number of individual country studies, only in a minority of countries that the time-series data are consistent with the Kuznets inverted U-shaped hypothesis. Nevertheless, results from such studies should be interpreted with caution. Owing to insufficient long-spanned time-series data on the distribution of income, a time-series analysis could be done only over a short period. Deininger and Squire (1998) stress that these limited periods of time normally covered in time-series studies are certainly too short to make any meaningful conclusion about a Kuznets curve hypothesis which refers to a secular phenomenon after all.

Even though recent empirical evidence tends to show no systematic causality running from economic to income distribution, it does not suggest that these two factors are entirely independent of one another. It is also plausible that the causality might run in the opposite direction, that is, income distribution may directly or indirectly influence the long-run growth rate through other channels. Whether inequality positively or negatively affects economic growth are what many researchers try to address in an attempt to help designing optimal policies to handle the inequality problems as well as enhance the rate of growth of the economy. Examples of studies that try to investigate the effect of income inequality on economic growth are Alesina and Rodrik (1994), Perrson and Tabellini (1994), Alesina and Perotti (1996), Perotti (1996), and Deininger and Squire (1998). Either using cross-sectional or time-series data, they all seem to give consistent results in supporting the argument that income inequality is indeed harmful for growth.

2.4 Underlying Factors

By and large, studies on the relationship between income distribution and economic growth seem to agree on the view that the inequality-growth relationship is not a simple one; rather, it is quite complicated in that both factors can interact with one another through other underlying factors. Therefore, one should be clear about the channels through which growth might affect inequality along with those through which inequality might affect growth. In this section, theories and hypotheses highlighting on economic, political, as well as social factors believed to correlate with income distribution and economic growth are examined in detail.

2.4.1 Economic Structural Change

Even though recent empirical evidence tends to show no systematic causality running from economic growth to income distribution, it does not mean that these two factors are entirely independent of one another. Consistent with the Kuznets inverted-U shaped hypothesis, the theoretical model of development that focuses on the long-run structural transformation and resources allocation of a primarily subsistence economy is

that formulated by Lewis (1954). The so-called Lewis model centres on a dual economy in which unlimited supply of unskilled labour can move freely from the rural agricultural sector to the urban non-agricultural sector. The wage in the urban non-agricultural sector is assumed to be constant and determined as a given mark-up on the rural agricultural wage. Workers can be withdrawn from the agricultural sector to the high-productivity and high-wage non-agricultural sector, without any significant impact on agricultural output.

As the development process begins, industrialisation and urbanisation start to play the roles. Producers would hire a number of workers at a given wage, and then reinvest their profits in creating new capital. The larger capital stock results in a greater demand for labour, which correspondingly induces greater rural-urban migration, increases employment, and raises total output. This process of self-sustaining growth continues until all surplus of rural labour is absorbed into the urban sector.

As long as these assumptions prevail, there would be an increase in inequality as average incomes rise. It is not until the non-agricultural sector gradually absorbs all the surplus labour from the rural agricultural sector when the rural wage begins to move upward and converge to the urban wage. The distribution of income, as a result, improves. Thus, it is reasonable to believe that developed countries that have completed the transitional process should exhibit less inequality than the developing countries that are still in the middle of it.

2.4.2 Credit Market

Credit market takes an important part in governing the distribution of income as well as the growth rate since it involves the level of capital stock available in a country. In a case where the market works perfectly, investment decisions would be determined by the prospective returns on investment and the market price of capital, adjusted for the risk it entails. If individuals have good investment opportunities, their income, wealth, or social status would not matter in acquiring loans. Unfortunately, credit market in

almost every country is not perfect, productive opportunities would vary along the wealth distribution in the way that individuals at the lower-end of the scale do not have the same chances in life as those at the upper-end. This might be because they cannot easily obtain loans to start up a business or they cannot afford the insurance they would require to undertake some risky but productive investment. Unequally distributed investment opportunities thus lead to inefficiency and underinvestment by those who have good productive potentials (Ferreira, 1999; World Development Report, 2006).

This is also the case for worthwhile investments such as education, good nutrition, farm production, self-employment, owner-occupied housing, and innovation implementation, all of which initially require some large fixed costs or minimum lumpy investments. Therefore, wealth obviously needs to be sufficiently concentrated in order for individuals or families to be able to cover such large sunk costs, and thereby initiate new industrial activities (Aghion and Williamson, 1998). Individuals who do not have initial wealth high enough, have to borrow to start such investments. This is when a credit market starts its essential role.

Possibilities to default and difficulty in enforcing contract in developing countries lead to collateral requirements and differentiated interest rates. Whereas collateral fundamentally acts as a means to prevent intentional default on the part of borrowers in that the possibility of losing collateral reduces borrowers' incentive to walk away without paying the loan, an interest rate reflects the opportunity cost of capital. With a substantial gap between the lending and the borrowing rates, individuals who want to invest their own money would face the lower opportunity cost than those who need to borrow. This means that despite exactly the same returns on investment, the wealthy will invest more than the poor, and if the wealthy themselves want to borrow, they would be charged at the lower interest rates. To the extent that wealth matters in the ability to put up collateral, it matters in determining the credibility of repayment, and access to the credit market. In some worse cases, individuals who are unable to provide sufficient collateral will have no access to credit at any interest rates. Taken together, an inability to provide collateral and the higher interest rates charged, prevent individuals with

inadequate wealth from the most productive sector of the economy, even if they are as efficient as anyone else. In other words, they could not freely choose occupations or undertake investment opportunities available given their skills (Banerjee and Newman, 1993; Aghion et al., 1999).

Credit constraints have more severe effects in the case of human capital investments because borrowing in order to make such an intangible asset is usually expensive. Human capital, although an asset, cannot be legally pledged or mortgaged, for the simple reason that pledging one's human capital would be equivalent to selling oneself into slavery (World Development Report, 2006). Family's income and wealth hence become major determinants of the size of the investment: richer families tend to invest more in their children's education and health, whereas poorer families tend to underinvest. Human capital investments matter, especially in very low-income countries, in that they affect individuals' capacity to perform productive works, earning ability, and thus their prospected income. In the light of this view, it is possible that ones might be trapped in a vicious circle with perpetuated inequalities throughout generations.

In sum, individuals' wealth can determine and shape the opportunities opened up to them to improve their situations in many ways; it can lead to more productive investments, improved education outcomes, and better health care, in turn, such improvements lead to better economic status. But in a country where markets are imperfect, unequally distributed economic well-being can cause underinvestment, misused of resources for some less productive purpose, and reduction in overall productivity. This implies that public action should be taken so that an individual's success in many dimensions should reflect his/her efforts and talents, not his/her background.

2.4.3 Redistributive Policy

A country in which income is unequally distributed among the population, its government is likely to be pressured by the majority of people to redistribute. Good

policy should aim to diffuse existing resources while distorting incentives and growth as little as possible. Government policies aiming to redistribute existing wealth to a broader population can be in forms of land reform, lump-sum taxation, public schooling, or other progressive subsidies and transfers. The benefits of redistribution, targeting on the low-income individuals who are in a position to effectively make use of them, should be more pronounced in countries where capital market is imperfect. As previously mentioned, credit constraints prevent low-income individuals from undertaking the efficient amount of investments. These redistributive policies are likely to help those unfortunate groups out of the inequality trap, increase investment opportunities, improve borrowers' incentives to supply effort, consecutively raise aggregate productivity, and stimulate overall growth rate (e.g. Easterly and Rebelo, 1993; Perotti, 1996).

On the other hand, if redistribution policies aim to tax increments to the stock of wealth, rather than the existing wealth base, they are likely to distort incentives and incur efficiency costs. This is because tax system such as income taxation and consumption taxation, imposed on the margin, tends to bring down savings, discourage investments, and ultimately lower economic growth (e.g. Alesina and Rodrik, 1994). Nevertheless, to avoid such large efficiency costs, a government can, for example, exempt taxes on basic foodstuffs and concentrate more on property taxation, in order to achieve the overall tax system that is moderately progressive (World Development Report, 2006). With an imperfect credit market, when redistribution is financed through taxes, there would be two incentive effects conflicting with one another; the negative incentive effect of the tax payers and the positive incentive effect of the tax receivers. While taxation reduces net returns and therefore the tax payers' incentives to invest, it increases the effort exerted by the receivers (Aghion et al., 1999). That is, redistribution could either raise or reduce the growth rate, depending on whether the negative effect is smaller or greater than the positive one.

2.4.4 Institutional Environment

An explanation as to why some countries choose effective growth-promoting policies while others do not, can be explained in part by their political institutions and social structures. Institutions determine the incentives or constraints individuals faced, and therefore may encourage or distort the normal economic processes. The shaping of institutions is thus likely to be a key influence on policy decisions as well as their quality.

Decisions on government policies such as public expenditures, transfers, and taxes, are not designed by a benevolent government aiming merely to maximise some social welfare function; rather they are results of political and social interactions of the population in a society. If income and wealth inequalities do not translate into unequal political power and influence, policy decisions can be partly modelled as votes on the values that certain policy variables are to take (Ferreira, 1999). This so-called median voter theorem states that if preferences for some policy variables vary monotonically across the distribution of income, and if each individual has one vote, then the preference of the median voter of that distribution would be the outcome of the voting process (Grandmont, 1978). If a proportional tax rate is to be chosen, preferences for such tax rate would decline as income level rises: the poorer the median voter in relation to the voter with average income, the higher the tax rate would be chosen by the voting process.

Nevertheless, the median voter theorem might not be useful in explaining the determinants of government policies if political institutions are of poor quality. In a country with highly unequal income distribution, the high-income individuals tend to have more political power and more influence on institutions. Policies implemented by a government may not truly reflect national economic goals; instead they are distorted by bribery, political contributions, and lobbying pressures of the high-income elite intended to secure their wealth, or even by politicians' own self-interest to accumulate wealth. For

example, policies may favour a particular elite group by granting them rents and monopolies, while most people are being excluded from profitable lines of business.

The role of institutions in defining and enforcing political and thus economic rights is also crucial to a country's economic development. Every individual, rich or poor, should ideally have rights to protect their own physical assets, talent, and ideas. But with poor institutions, there are difficulties in enforcing contracts and a risk of expropriation, which tend to discourage incentives and drive away potential investments. Therefore, in order to promote growth, a good institutional environment should be developed so that it can generate the equality of opportunity for individuals.

In the light of this view, the relationship between income distribution and economic growth should be more pronounced in democratic countries, in which the population can fully exercise their rights, than those with non-democratic political institutions (Persson and Tabellini, 1994). But as Temple (1999a) indicates, under authoritarian or democratic regimes, what is far more important is the nature of the political regime. The accountability of politicians to all should be of central attention - whether those who run the regime concentrate on self-interest, or they look after the interests of a nation as a whole. This is because inequalities in wealth, status, and power lead to the formation of impaired institutions and governance that perpetuate those initial inequalities and discourage investment and long-term growth.

2.4.5 Cultural Diversity

Cultural diversity is one of the most interesting and active research areas in the twentieth-first century. Attempts to achieve equity only in economic, social, and political are not enough, to expand human freedoms and human rights is also crucial. Like education, health, and political freedom, cultural liberty is another feature of human capital development that should be focused. Individuals must be able to freely express their identities without being discriminated against in other aspects of their lives. In reality, however, diverse ethnicities, languages, religions, and values are likely to cause

differences in opportunities opening up for them. For instance, particular ethnic groups or members of minority religions may find it difficult to take part in social interactions. This might be in forms of refraining them from participating in education, employment, or political activities, all of which tend to worsen development outcomes. And if such diversities are not managed properly, it can drive into instability, conflicts, and tensions within a society that would further deteriorate economic growth. Nonetheless, cultural identities even though have been increasingly recognised, they have been suppressed as national policy, not only through everyday exclusion of economic, social, and political discrimination, but also through religious persecutions and ethnic cleansings (Human Development Report, 2004).

Without taking those diversities into account, government's effort to alleviate the inequality problems may not be fulfilled. Policies such as redistribution therefore should be formulated in the way that explicitly respect and promote cultural differences. The interests of particular groups, whether minorities or majorities, should not be ignored and overridden by the majority or by dominant groups. It is also important that these multicultural policies should not contradict other national goals and other strategies of human development.

Even if finding approaches for managing diversities is not an easy tasks, it is still plausible. Human Development Report (2004) suggests various solutions to tackle such differences. For example, to avoid consistently underrepresented or outvoted political outcomes of minority groups, policies should provide political power sharing arrangements. As for religious minorities, there should be policies that ensure religious freedom and accommodate religious practices. A state legal system along with national official language might be pluralise to recognise diversities in a multicultural society. To be more precise, in a country where cultural and ethnic are significantly diverse, economic and social humanitarian policies aiming to promote an equitable distribution by targeting individuals with low-income levels would help to some extent but they would not be enough. Such policies should be affirmative action aiming to reduce inequalities

between groups and deeply entrenched injustices by recognising cultural differences and responding directly to them.

2.5 Related Studies on the Inequality-Growth Simultaneous Relationship

There are numbers of studies trying to investigate the relationship between a country's income distribution and its economic growth. Nevertheless, almost all of them focus on a one-way causality, either from inequality to growth or from growth to inequality. To reflect the aim of this study, only the two recent studies that look at both causalities and examine inequality and growth simultaneously in the same way as this study are summarised and fully discussed.

Lundberg and Squire (2003) are among the earliest researchers who set out to test whether growth and inequality are simultaneously correlated and are the joint outcomes of other variables and development processes. In doing so, they construct the model that explicitly allows growth to enter into the inequality equation and inequality to enter into the growth equation. Other than the Gini index, the growth equation includes the initial GDP level, mean years of schooling in the adult population, the share of government consumption, the ratio of money and quasi-money (M2) to GDP, inflation, the Sach-Warner openness index, and changes in the terms of trade. On the other hand, in addition to the growth rate, the inequality equation also includes education, the Gastil civil liberties index, the ratio of M2 to GDP, a measure of the distribution of land, and its interaction with a dummy for developing countries. The base growth and inequality equations have only two independent variables in common - education and the ratio of M2 to GDP.

Unlike earlier studies that estimate each equation independently, Lundberg and Squire estimate both structural equations simultaneously by applying the three-stage least squares (3SLS) method to the panel dataset for 38 countries since 1960. They find that income inequality is positively correlated to growth: a one point increase in the Gini index would increase the growth rate by 0.04 per cent. Growth, on the other hand,

positively affects inequality but the impact is rather small: a one percentage point increase in the growth rate is correlated with a 1.41 point increase in the Gini index. Of the two policy variables both equations have in common, only education is statistically significant in both equations. An additional year of education on average will lead to more equitable distribution but at the cost of slower growth. Nevertheless, policy makers can promote growth without harming equality by increasing trade openness, measured by the Sachs-Warner index, and similarly they can improve income distribution without damaging growth by reducing the Gastil index, which implies an improvement in civil liberties, or via a more equitable land distribution.

Another related study is Fielding and Torres (2006). Their conceptual framework regarding the simultaneity is quite similar to Lundberg and Squire (2003). However, the results provide different implications on the issue due to differences in the variables used for economic development. Rather than employing the growth rate, instead they use the level of income per capita in the analysis. In addition to the income and inequality equations, Fielding and Torres expand the model to include two more equations, namely education and health, all of which are estimated by the three-stage least squares (3SLS) method. The income equation includes the Gini coefficient, the adult literacy rate, life expectancy at birth, ethno-linguistic diversity, the stock of natural resources and the regional dummy variables. Likewise, the inequality equation includes income level and its squared, the share of Christian population, and the regional, religious and colonial origin dummy variables. Whereas the education equation comprises of income, life expectancy, the share of Muslim population and the colonial dummy, the health equation consists of inequality, the literacy rate, temperature and its squared and the dummy for African countries. With this framework, income inequality can indirectly affect economic development only through the health variable and not any other way around.

Results from the income equation show that an increase in income inequality, measured by the Gini index, directly leads to a decrease in average income levels. At the same time, estimated results from the inequality equation point toward the Kuznets

curve hypothesis: inequality would first rise and then fall as a country's level of income rises. As for the indirect effect, it is found that lower inequality raises life expectancy at birth, which in turn increases per capita income. The positive relationship found between human capital in a form of health and income is not found in the case of education. Whilst an increase in life expectancy leads to a much higher per capita income level, higher literacy rate is associated with lower income per capita.

Even though the findings from both studies do differ considerably, a very important finding illustrated is that income distribution and economic development are indeed simultaneously correlated. Research on growth and inequality thus should focus on their joint determinants. This means that conventional analysis that investigates the impact of policy on growth or inequality independently therefore fails in two aspects, "first, it ignores the evidence that policies designed to improve one outcome will probably also influence the other; and second, to the extent that an independent model is under identified, it can't even be entirely certain what it is estimating" (Lundberg and Squire, 2003, p. 341-342).

Despite some insightful facts they provide, the two related studies seem to be dissatisfactory in suggesting policy recommendations. This is because they largely ignore the crucial indirect relationship between income distribution and economic growth, which can be operated via other key variables. In Lundberg and Squire (2003), exogenously given policy variables in both the growth and inequality equations imply that these policy variables contribute to income distribution and growth when foregoing theories and empirical studies also show otherwise. Even if Fielding and Torres (2006), to some extent, take the indirect relationship between inequality and income into their analysis, overall, the study does not help much in explaining the real causes of them. Too many dummy variables entered into equations inconsistently and irrationally produce doubtful results that are unexplainable, effective development policies thus could not be achieved.

CHAPTER III

INEQUALITY AND GROWTH IN THE GLOBALISATION ASPECTS

Over the past decades, global integration has been evolved rapidly as a result of human innovation and technological advances. Money, commodities and ideas move around the world freer than ever, enabling people to access to cheaper imports, larger export markets, more capital flows and modern technology. This phenomenon so-called globalisation connects the world together and also makes it smaller. Amid the increasingly importance of global integration, analysing the interconnection between income distribution and economic growth in a closed-economy setting would be misleading in that it does not reflect the reality. This chapter therefore further investigates the inequality-growth relationship in today's world by taking into account the globalisation aspects. It also discusses the pros and cons of the process as claimed by its advocates and opponents in detail.

Globalisation has different dimensions but this study focuses mainly on economic globalisation which refers to as a markedly increasing integration of economies and rising economic activities taking place across national frontiers. The process includes trade liberalisation, capital flows, labour migration and technological transfers.

One indication of increasing global economic integration is the growing importance of international trade in the world economy. World Development Indicators (2006) shows that the share of trade (exports and imports) in total GDP rose from 32.4 percent in 1990 to 44.9 percent in 2004 for merchandise trade and from 7.8 percent to 10.5 percent for trade in services. Another is the increasing size and importance of private capital flows, confirmed by the share of gross capital flows which rose from 10.3 percent to 28.4 percent in the same period.

However, the effects of globalisation are still a matter of controversy. Its advocates believe that the process is a key to future world economic development in

that it produces efficiency gains, induces knowledge transfers and spillovers and creates rapid growth and prosperity as well as other universal benefits. Globalisation opponents, in contrast, claim that it produces few benefits in return but causes a vast destruction in many aspects; it exploits people in developing countries, threatens employment and working conditions, increases inequality both within and between countries, exposes to high volatility and sensitivity to external shocks, impedes social progress and even creates environmental degradation.

Widening income inequality experienced by a number of the world's most developed countries from the 1980s contradicts with the inverted-U shaped hypothesis, which suggests an improvement in the distribution of income later on after any worsening in the initial stages of development (Kuznets, 1955), and therefore calls into question the role of globalisation that has been increasingly crucial in the world economy nowadays.

In this regard, one should be clear on two distinct concepts of inequality, which potentially affected by globalisation through quite different channels (Lundberg and Milanovic, 2000; O'Rourke, 2001). The first is within-country inequality, which refers to differences in income between individuals in a country. The second is between-country inequality, which refers to differences between countries' average per capita incomes. Global inequality thus depends on both within and between-country inequality and refers to differences in income between all individuals in the world, regardless of where they live.

3.1 International Trade

Trade barriers and tariffs have fallen greatly since the 1980s partly due to cheaper, faster and better quality international transport and communications technology, and partly due to export-oriented trade policies increasingly followed by many developing countries (Wood, 1995). More and more countries are becoming integrated with the world economy and, with greater opportunities in the global market,

their trading activities are thus largely expanded. However, benefits from global integration do not spread evenly across countries and do not come without risks. Whether trade openness widens or narrows inequality and whether it helps countries to grow faster are focused in this study.

3.1.1 International Trade and Income Distribution

The link between international trade and income distribution can be primarily explained by the Heckscher-Ohlin theory, extended from the Ricardian law of comparative advantage. According to it, the patterns of trade reflect differences in the distribution of factor endowments across countries. That is, every country will export commodities that use intensively those factors of production with which they are most well-endowed. Developing countries that generally are abundant in unskilled labour but scarce in skilled labour tend to export goods that are labour-intensive and import goods that are skill-intensive such as computer software. On the other hand, developed countries that by and large are abundant in skilled labour tend to export skill-intensive manufactures and import labour-intensive manufactures and primary products.

Under such conditions, commodity market integration would cause shifts in the relative labour demand, significant impacts on factor prices and hence changes in wage distribution within participating countries in predictable ways. In developing countries where abundant unskilled labour is cheap and scarce skilled labour is expensive, the trade boom leads to an increase in the demand for unskilled labour and a decrease in the demand for skilled labour. Relative factor price of the former thus rises whereas that of the latter falls, and result in an improvement in existing wage distribution. In developed countries where unskilled labour is relatively expensive and skilled labour is relatively cheap, the trade boom, on the contrary, causes widen wage inequality.

So far, globalisation via international trade could partly account for the increased wage dispersion and thus greater income inequality between skilled and unskilled labour as observed in developed countries over the past decades, particularly in the

United States and the United Kingdom, and mass unemployment in Western European countries, whose labour markets are much less flexible owing to the greater strength of the welfare state (Singh, 2001).

Nevertheless, for the case of developing countries, the Heckscher-Ohlin theory does not systematically consistent with the empirical data. While increased trade openness involved with lower inequality in some countries such as East Asian countries, others such as Latin American countries experienced higher inequality. As Stewart and Berry (2000) point out, the theoretical expected effects of trade on income distribution in developing countries are far from uniform; rather, they vary with the structure of economy and the composition of exports. They then divide developing countries into four groups and forecast changes in distribution during moving to a more liberalised trade regime within each group separately.

First, manufacturing-goods export producers: countries that have the ability to penetrate world markets in the production of labour-intensive manufactures on a major scale. Many of the Asian countries such as Thailand are examples. Countries in this group tend to experience an improvement in income distribution from international trade as labour-intensive commodities and thus the demand for unskilled labour used intensively in producing such commodities expand.

Second, primary-goods export producers: countries that specialise in primary products produced by peasant farmers. Ghana, Kenya and Uganda are examples of this type of economy. Like the first group that lends support to the standard trade theory, income inequality within this group of countries is most likely to lessen as labour incomes of small peasants rise.

Third, natural resource exporters: countries that specialise in natural resource exports produced by large companies. Mineral-based economies are, for example, Zambia and Nigeria. In contrast to the first two groups, income distribution in this case tends to deteriorate with freer trade. It is the large domestic or foreign companies and

the relatively few skilled workers employed that are likely to benefit from increased trade opportunities.

Fourth, import-substitution industrialising countries: countries with large import-substituting industrial urban sectors, whose main exports are primary products. Many Latin American countries in the late 1970s were classed in this group. Trade liberalisation tends to reduce wages and cause high unemployment in the import-competing sector. As a result, worsening income distribution in the urban is likely to outweigh any improvements in the rural.

Unlike Stewart and Berry (2000), others argue that a reduction in employment in the sectors that lose competitiveness is likely to be temporary and more than offset by an increase in employment in those sectors that continuously expand. Papageorgiou et al. (1990) and Matusz and Tarr (1999) examine the link between trade liberalisation and the labour market adjustment and find that in some countries, the aggregate rate of unemployment declines after controlling for other factors, and in other countries, an increase in unemployment rather small and could be attributed to factors other than those from the reform itself. Hence, they conclude that liberalisation attempts have not brought significant transition costs in terms of unemployment. And since import-substitution policies tend to benefit relatively rich and powerful groups as well as those skilled labour, moving toward freer trade overall would bring about greater employment and improvement in income inequality (Krueger, 1981; Balassa, 1982; Behrman et al., 2003).

What should be noted is that although wider skill differentials tend to increase income inequality, the connection between the distribution of wage among workers and the distribution of income among households is not necessarily close (Wood, 1995, pp.466). Given that labour income is only one source of total income, there are still several factors that can intervene the link between these two sorts of distribution. Other sources of household income, namely, self-employment income and capital income may

offset or amplify the influence of wider skill differentials on income inequality, thus it is reasonable to use income distribution measures in the analysis.

According to Lundberg and Milanovic (2000), whether trade liberalisation is associated with narrowing or widening income inequality is no proof of causality; rather, any plausible explanations trying to link these two factors have to be tested empirically. So far, empirical results are still ambiguous depending on the sample, the econometric method or the estimation period covered. Consistent with the Heckscher-Ohlin hypothesis, Calderon and Chong (2001) find that trade openness has an equalising effect on income distribution in developing countries but a disequalising effect in developed countries. Barro (2000) and Milanovic (2002), in contrast, point out that income distribution is likely to worsen in developing countries but likely to improve in developed countries during the trade liberalisation process. Edwards (1997) and Savvides (1998) together find no causal relationship between these two factors in developed countries, but reach totally different conclusions for developing ones. While Edwards (1997) finds that trade protection in the earlier periods tend to widen income disparity in the following periods, Savvides (1998) finds that these barriers tend to narrow down such inequality.

Instead of explicitly testing whether international trade reduces or raises income inequality as previous studies, studies such as Bourguignon and Morrisson (1990), Spilimbergo et al. (1999), and Fischer (2001) empirically show that a country's relative factor endowments of production factors, their ownership structure as well as foreign trade are major determinants of differences in income inequality across countries. Their results point towards a significant and large effect of comparative advantages and the foreign trade structure in the distribution of income. Even though the insights are more in line with the theory, the results are still mixed. Bourguignon and Morrisson (1990) suggest that there seems to be a disequalising effect in mineral and agricultural resource-abundant countries and an equalising effect in skill-abundant ones. Spilimbergo et al. (1999), on the other hand, find that countries with relatively well-

endowed capital and land tend to face decreasing inequality while those with relatively well-endowed skills tend to face increasing inequality after opening up to trade.

3.1.2 International Trade and Economic Growth

Apart from the effects on income inequality, international trade also has significant implications on a country's average income and its growth. Increased trade openness is generally believed to accelerate economic growth through various mechanisms. However, the relationship between trade and growth should be further discussed in the context of growth theory. Standard growth theories put forward the accumulations of physical capital and human capital as well as technological progress - total factor productivity, in other words, as the key factors in determining the steady-state income per capita. Any changes in such key factors that push a country out of its steady state would induce changes in the income level and the growth rate accordingly, at least during a transition to the new steady state.

Even if exogenously determined technological progress is proposed as the major source of sustained economic growth in the neoclassical growth theories pioneered by Solow (1956) and Swan (1956), international trade still has an important role in partly governing economic growth at least in the short run. This is because openness not only leads to a more efficient resources allocation by allowing imports of goods and services at a lower cost than produce them domestically. It also increases efficiency of investment, especially in developing countries, by enabling them to import sophisticated capital and intermediate inputs that are crucial to economic growth, but which would be expensive or impossible to produce at home (World Bank, 2004). Besides, the process tends to reduce monopoly power and rent-seeking behaviour arisen from trade restrictions (Berg and Krueger, 2003). Such improvements may even induce higher rate of domestic savings and attract foreign capital inflows. According to this strand of growth theories, while openness raises the level of productivity and hence the steady-state level of income, it only boosts a country's growth rate for a period

during which it transits to a new steady state. The effect on the engine of long-run growth, namely technological progress, however, could not be clarified.

The new growth theories therefore have been developed enormously in the past decades in order to propose alternative perspectives of which long-run growth is determined within the model, rather than exogenously given, so that the effects of a number of policies, including trade policy, could be realised. Such models cast endogenously determined technological development as the engine of growth which initially requires an intentional investment of resources by profit-seeking firms or entrepreneurs (Grossman and Helpman, 1994). They consider international trade as another channel for technological development in different dimensions. First, with specialisation in activities that a country has comparative advantage, technological gain from learning-by-doing practice could be easily achieved (Arrow, 1962; Romer, 1986). Second, exposure to intense international competition and access to larger markets would stimulate innovation and productive activities through research and development (R&D) investment (Grossman and Helpman, 1994). Third, openness to trade also implies openness to recent ideas and innovations and other types of knowledge (Berg and Krueger, 2003). To the extent that technological progress comprises of both innovation and the adoption and imitation of existing technology from technological advanced countries (Aghion et al., 2005), a country engaged in international trade would benefit from foreign technology embodied within sophisticated imports and services by reducing the cost of technology adoption and hence indirectly raising productivity growth.

While the vast literature on the effects of trade liberalisation on income distribution reveals no systematic relationship, the positive effect of openness on overall growth is firmly supported by the evidence. Examples are Edwards (1998), Frankel and Romer (1999), Berg and Krueger (2003) and Dollar and Kraay (2004), all of which agree that openness is an important element in explaining growth performance and countries that are more integrated with the world economy through trade tend to experience faster economic growth.

3.1.3 International Trade and Convergence

Another important issue is the effect of international trade on income differences across countries, in other words, whether trade openness is a force for income convergence. The link between trade liberalisation and the convergence can be theoretically supported by the Stolper-Samuelson factor price equalisation theorem positing that a reduction in differences in commodity prices as a result of trade should eventually equalise the prices of factors of production across countries and bring per capita incomes closer together. However, in this globalisation era where production factors can move easily from country to country and superior factors such as skilled labour and advanced capital are being developed continuously, the factor price equalisation theorem is less likely to be upheld.

The alternative explanation which seems to be more realistic is that trade can be an important medium through which technology flows across countries. And since between-country inequality is partly due to differences in the rate of technology diffusion, developing countries can reap the advantages of backwardness from technological transfers through opening up economy (Jovanovic and Lach, 1991; Sachs and Warner, 1995).

Ben-David (1993, 1996) and Sachs and Warner (1995) show that there is a strong tendency toward convergence among international trade participating countries: countries with initially low per capita income levels are likely to grow faster than high-income ones, thus reduce the income gap and between-country inequality over time, while other non-participants fall further and further behind. Nonetheless, when using a more elaborated method in analysing the link between trade liberalisation and income convergence as Slaughter (2001) illustrates, there are no such systematic relationship among countries engaged in the liberalisation process. In some cases, it is found that freer trade in fact diverges income across countries. Moreover, if the convergence phenomenon is indeed observed, it could be attributed to other aspects of globalisation such as labour migration and capital flows (O'Rourke, 2001).

3.2 Foreign Direct Investment

Foreign capital flows have increasingly been subjects of interest in international and development economics over the past two decades. These private flows include foreign direct investment (FDI), portfolio investment and debt flows. More and more firms based in one country have invested, established and run business operations in other countries. Savers from many countries also have diversified their portfolio to include foreign financial assets, whereas borrowers turn to foreign sources of funding as well as domestic ones. Consequences of financial liberalisation on income distribution, economic development and social welfare especially in the host countries are the major concerns. And since the current largest form of foreign capital inflows to developing countries is FDI, it is mainly focused in this study.

3.2.1 FDI and Income Distribution

Arguments on the impacts of FDI on the distribution of income are whether it causes the equalising or disequalising effects on inequality. On the one hand, it is the view suggesting that output must be produced sufficiently enough before it can be redistributed to the mass of the population. Similar to the Kuznets' inverted-U shaped hypothesis, income inequality is therefore perceived as a necessary precondition for an economy to grow. In light of this view, investment - domestic or foreign - can foster growth and eventually distribute its benefit throughout the whole economy. This implicitly addresses that even if FDI initially concentrates only in some sectors, in the long run, growth in such leading sectors could bring about more equitable income distribution (Rubinson, 1976; Tsai, 1995).

On the other hand, it is the claim that foreign capital flows benefit only a few groups of people in the host countries: inflows of FDI are likely to shift the relative demand for labour in a way that favours skilled labour, cause their relative wages to rise and thus widen wage and income distribution. Studies exemplify this argument are Tsai (1995), Aitken et al. (1996), Lipsey and Sjöholm (2001), Choi (2006). In addition to the

well-known fact that the wage differential between foreign and domestic firms is significant, even when worker and firm characteristics are taken into account (Gorg et al., 2007), deteriorating income distribution may arise because foreign capital inflows from more advanced countries usually involve capital intensity and technological advances such as computers, computer-assisted machines and robotics, and advances in communication technology, of which require specific skills to operate. In the sense that skilled labour is likely to be complementary to such innovation-embodied capital and sophisticated technology than unskilled labour (Borensztein et al., 1998; O'Rourke, 2001), FDI inflows to developing countries therefore would increase the demand for skilled labour, cause changes in factor prices and worsen overall inequality.

A more elaborate explanation as to why foreign investment can deteriorate inequality is outsourcing by multinational enterprises (MNCs). In response to import competition, domestic firms increasingly resort some activities in the production lines to lower-cost countries and later on re-import such intermediate inputs to their source countries. As Feenstra and Hanson (1995) argue, in general, most activities outsourced from developed countries to developing ones are more skilled-labour intensive than those formerly produced in developing countries, but less skilled-labour intensive than those being produced in developed countries. As a result, an increase in outsourcing by multinationals in activities that use relatively high ratio of skilled to unskilled labour would enhance average skill intensity and, in turn, increase the relative demand for skilled labour in the host countries. The source countries, on the other hand, are left with activities that use a high ratio of skilled to unskilled labour relative to those that have been outsourced. Therefore, they would also face a rise in average skill intensity of production and an increase in the relative demand for skilled labour. To be more precise, foreign direct investment in a kind of outsourcing tends to raise the relative wage and employment of skilled labour within the corresponding sectors and hence worsen inequality in both countries.

Whilst Berman et al. (1994) claim that U.S. materials imports are too small to have impacts on U.S. wages, Feenstra and Hanson (1995, 1996, 1997) find otherwise. In

their studies, they find that FDI inflows from the United States can account for the rising wage inequality in Mexico in the late 1980s. Likewise, the rising import share in the United States, used to measure outsourcing by U.S. multinationals, also greatly contributes to an increase in the relative demand for skilled labour in the U.S. and changes in their wage share over that period.

3.2.2 FDI and Economic Growth

Despite the potential disequalising effects of FDI on income distribution, like openness to trade, openness to foreign investment is commonly believed to accelerate growth of the host countries. There are many reasons indicating that FDI can promote economic growth. In the context of neoclassical growth theories, inflows of FDI can affect output growth but only in the short run because in the long run, it is just exogenous technological progress that can be considered as the source of economic growth. But in the new growth theories, which highlight the importance of improvements in technology, efficiency, and productivity, FDI can play a crucial role in endogenously stimulating long-run growth through several channels.

FDI's role as a channel for transferring knowledge and advanced technology from developed to developing countries contributes greatly to higher growth in the new strand of literature. Lim (2001) and Gorg and Greenaway (2004) review those mechanisms through which the presence of FDI can lead to productivity spillovers or externalities beneficial to domestic firms. In augmenting capital accumulation, multinationals also introduce the use of new inputs and more advanced technologies in production. Less advanced local firms therefore can improve their productivity by imitating some technology used by MNCs, by trying to work more efficiently with existing resources and technology or by searching for better technologies in response to increased competitive pressure in the domestic market. Inflows of FDI, in addition, induces human capital development since it not only provides on-the-job training and skills acquisition that increase labour productivity, but also brings in better management practices and organisational arrangement. Benefits from the knowledge can spill over

later on when workers move to local firms or start their own businesses. Beside the employment creation effect, the presence of FDI can support domestic suppliers via inter-industry linkages (Markusen and Venables, 1999; Gorg and Greenaway, 2004). Multinationals may help increase the productivity and efficiency of suppliers by demanding high-quality intermediate products, assisting them in setting up production facilities, providing technical know-how and management skills, and even introducing them to its affiliates in other countries. Above all, by collaboration and imitation, multinational firms also help domestic firms broaden international linkages, expand global market access for exports and boost the export sector (Blomstrom and Kokko, 1996).

Many empirical studies have been proposed to examine the consequences of foreign capital flows on economic growth. Even if most studies find a positive relationship between FDI inflows and growth, the extent to which the host countries gain from FDI differs significantly. Blomstrom et al. (1992), Borensztein et al. (1998) and Balasubramanyam et al. (1999) reach the conclusion that FDI is indeed an engine of growth, but only in the case where the host country has a minimum threshold level of human capital. This is because a sufficient capability to absorb advanced technology is required to justify technology transfer and spillovers caused by capital inflows from more advanced countries. Likewise, Balasubramanyam et al. (1996) also discover a positive link between FDI inflows and growth, but such beneficial effect of FDI is more pronounced in countries that pursue export-promoting trade policies than in those with import-substituting policies. For the reason that import-substituting trade and investment policies are aimed to protect local industries from foreign competition, they tend to distort social and private returns to capital and hence reduce the efficiency of FDI. Differences in market and institutional characteristics across countries are also essential factors in the FDI-growth relationship. FDI is shown to be more growth-enhancing in countries with better quality institutions, measured by stringent property rights and bureaucratic efficiency, since such countries are more able to capture the benefits provided by FDI (Olofsdotter, 1998).

On the contrary, opponents to foreign direct investment view it as detrimental to welfare and development. Rather than supporting domestic investment by being complementary (de Mello, 1999), inflows of foreign capital may substitute and crowd out local production. It is reasonable to believe that multinationals have firm-specific advantages; they have lower marginal costs comparing to domestic counterparts, even though such foreign enterprises pay higher wages to equally productive workers. In order to attract workers, domestic firms have to compete with those foreign ones by paying higher wages. Such increasingly intense competition both in the factor of production market and in the product market tends to bring down profits of local firms and force them to steadily reduce production. Furthermore, the presence of powerful MNCs may even put less efficient firms out of business and create a monopolistic situation that exploit the local economy. In supporting this argument, the results from Carkovic and Levine (2002) are inconsistent with the view that FDI exerts a positive impact on growth that is independent of other growth determinants, they then conclude that the relationship between FDI and growth is not robust.

3.3 Globalisation and Labour Exploitation

One of the main concerns regarding the consequence of globalisation is the issue of exploitative sweatshop labour. The view that ever growing economic integration initiates an international race to the bottom that produces poor labour conditions has received increasing attention particularly in developed countries (Palley, 2002). This is because each country has an incentive to try to gain international competitive advantage as much as possible. In the era of globalisation, the field for production of goods are extended so large that it brings in new producers. Whilst good competitors aim at productivity and quality, bad competitors end up in labour exploitation. Alternatively, firms may increase their competitiveness by relocating to countries with plenty of unskilled labour available at low wages or internationally subcontracting out to local suppliers to do their job. Hired by low-standard firms, workers are subject to sweatshop employment, that is, awfully low wages, longer working hour, unsafe workplaces and desperate working conditions without any job security. Large

multinational companies in the food and clothing industries are being accused for undermining labour standards in low-income countries by demanding quicker and cheaper delivery of the latest products from their subcontractors.

Amid the growing importance of foreign trade and investment, developing countries with low labour standards may compete to cut labour costs and raise the total supply of unskilled labour by means of child labour for the reason that children are often cheaper than adults both in terms of wages and non-wage benefits. Higher child labour demands and subsequently higher household incomes, therefore, encourage low-income parents to hold back investment in their children's education and skills, but instead send them to work. The global competition therefore could be responsible for sweatshop employment, lower labour standards, a higher incidence of child labour and a lower stock of human capital, all of which are detrimental to income distribution and long-run growth.

On the contrary, it is argued that multinationals usually associate with capital- and skill-intensive activities and correspondingly demand for relatively skilled labour. An increase in FDI flows therefore would lower the relative wage of unskilled labour including that of child labour and indirectly reduce the benefit from child labouring. Parents hence are likely to substitute schooling for child labour. Also, if parents are altruistic and will send their children to work only for a reason to support subsistence living as Basu and Van (1998) indicate, to the extent that export growth and inflows of FDI contribute greatly to economic growth and average income level, they will also have an indirect effect in reducing the incidence of child labour and rising in the stock of human capital in the host countries. Recent studies also seem to support this line of argument in that they found no empirical evidence that trade openness and FDI induced child labour. In contrast, it is shown that countries that are more integrated with the global economy are likely to have a lower incidence of child labour (Cigno et al., 2002; Neumayer and De Soysa, 2005; Davies and Voy, 2008).

Then again, it is also possible that the incidence of child labour itself may encourage FDI via low labour costs or, in contrast, may discourage FDI via its adverse effect on human capital accumulation. Empirical studies however seem to support the latter argument (Kucera, 2002; Braun, 2006). Given that children's participation in the labour market reflects their absence from school attendance, a high incidence of child labour thus implies a low level of human capital formation. And since multinationals have a high demand for relatively skilled labour, countries in which child labour are prevalent are less attractive to foreign investors.

3.4 Globalisation and Natural Resource Exploitation

The notion that natural resources are more likely an economic curse than a blessing is increasingly put forward in the literature. Countries with natural resource abundance tend to have lower growth than countries without these valuable assets. This situation may occur for many different reasons, particularly the globalisation era in which countries are more and more integrated into the world economy.

3.4.1 Dutch Disease

One possibility lies in the economic concept of the Dutch disease, which is termed after the adverse effects of the natural gas discoveries in the Netherlands in the 1970s on the non-oil export sector. This peculiar phenomenon similarly observed in the United Kingdom, Norway, and several oil-exporting countries after the oil price shocks of the 1970s has ignited analysis on the issue. In the Dutch disease model, a rise in revenues from natural resource exports weakens economic growth by causing an appreciation of the real exchange rate and thus making other traded goods less competitive in the world market (Corden and Neary, 1982). At the same time, capital and labour would shift away from the traditional export sector into the resource-intensive and the non-tradable sectors to meet the increasing demand for domestic products. Coupled with the rises in returns to capital and labour, the exploitation of natural resources may damage a country's long-term growth potential in that it shrinks the

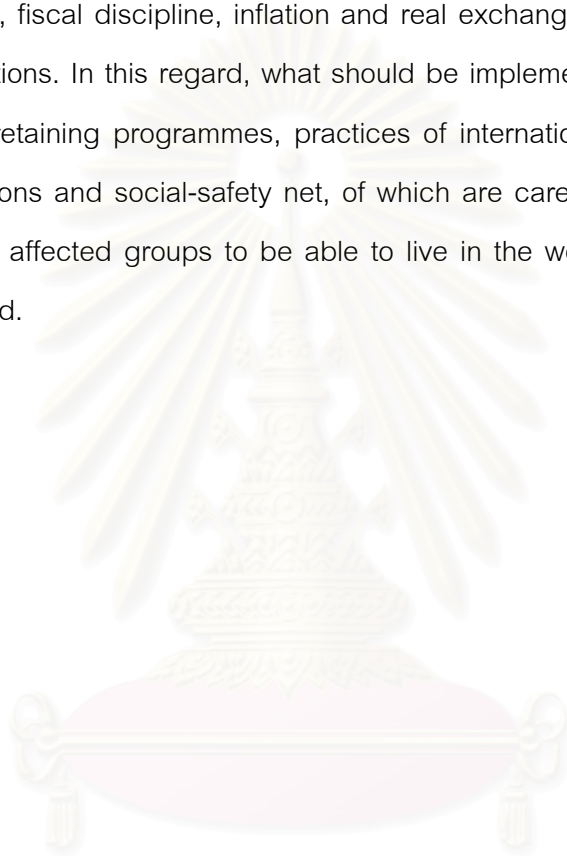
manufacturing sector - a major source of human capital development (Ebrahim-zadeh, 2003).

Jensen (2003) and Asiedu (2006), on the other hand, put forward the role of natural resources in determining the inflows of FDI. They find that, like market size and other policy and institutional factors, FDI is also significantly driven by natural resources. So far as the benefits of FDI are concerned, in the case of extractive industries, it is unlikely that foreign investment inflows drawn by opportunities to exploit natural resources would generate productivity spillovers and economic growth. Studies such as Sachs and Warner (1995) empirically show that the negative relationship between natural resource endowments and growth is robust to different measures of resource abundance and still remains after controlling for other standard growth variables: countries with a high ratio of natural resource exports in GDP tend to have lower growth rates in the subsequent period.

3.4.2 Political Conflict

Another potential explanation on the adverse effect of natural resource abundance can be found in the context of political economy. Resource endowments often provoke conflicts of interests within a society since different groups intensely fight for political control over the lucrative rents. These extreme rent-seeking behaviours not only undermine other economic resources but also divert the government from its normal function such as provision of public goods and infrastructure into politics of self-interest and corruption. Importantly, the natural resource conflict tends to be more violent and is likely to ignite civil war in low-income countries like those in Africa, whose economies are largely of natural resource dependent and revenues from the resource ownership are high comparing to other sources of income. That is, countries in which resource exploitation are large often subject to poor governance, low quality institutions, political unrest, deprived human capital and thus lower growth rate than resource-scarce ones.

By and large, globalisation has been considered as an effective means to help developing countries to develop. Nevertheless, Rodrik (2001) and others emphasise that such process should not be considered as a universal recommendation for all conditions and all types of countries. To ensure the benefits of globalisation, a country's specific features should be taken into consideration. These determining factors are, for example, the minimum threshold of development, the degree of macroeconomic stability, namely, fiscal discipline, inflation and real exchange rates, and the quality of domestic institutions. In this regard, what should be implemented are policies such as educational or retaining programmes, practices of international labour standards, job security regulations and social-safety net, of which are carefully designed to help the most vulnerable affected groups to be able to live in the world where economies are deeply integrated.



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CHAPTER IV

RESEARCH METHODOLOGY

This chapter provides the research methods of the study in detail. It firstly illustrates the conceptual framework in attempting to explain the interconnection between income distribution and economic growth succinctly. It then outlines the modelling framework and the rationales behind such specifications. The method of estimation as well as data used in the analysis are finally described.

4.1 Conceptual Framework

The two-way relationship between income inequality and growth is not a simple one; rather, it is quite complex involving a number of factors. This section thus provides a brief overview of the relationship as clearly shown in figure 4.1.

Income distribution and economic growth are believed to interact with each other directly and indirectly through other economic, political and social factors. In this analysis, there are four potential channels through which income distribution and growth can be related. These main channels, investments in physical capital, educational capital and health as well as globalisation, are in turn governed by other important factors. Credit market and cultural diversity are regarded as two major factors in that they determine the level of capital accumulated in a country. Other political factors such as institutional environment and government fiscal policies also act as crucial factors that can either encourage or discourage incentives to invest.

Besides, there are still other significant factors that even if it does not contribute to the inequality-growth relationship explicitly, they are likely to influence the two factors to some extent. While the initial level of income and R&D expenditure tend to affect the growth rate, the land inequality and the level of unemployment tend to impact on the distribution of income.

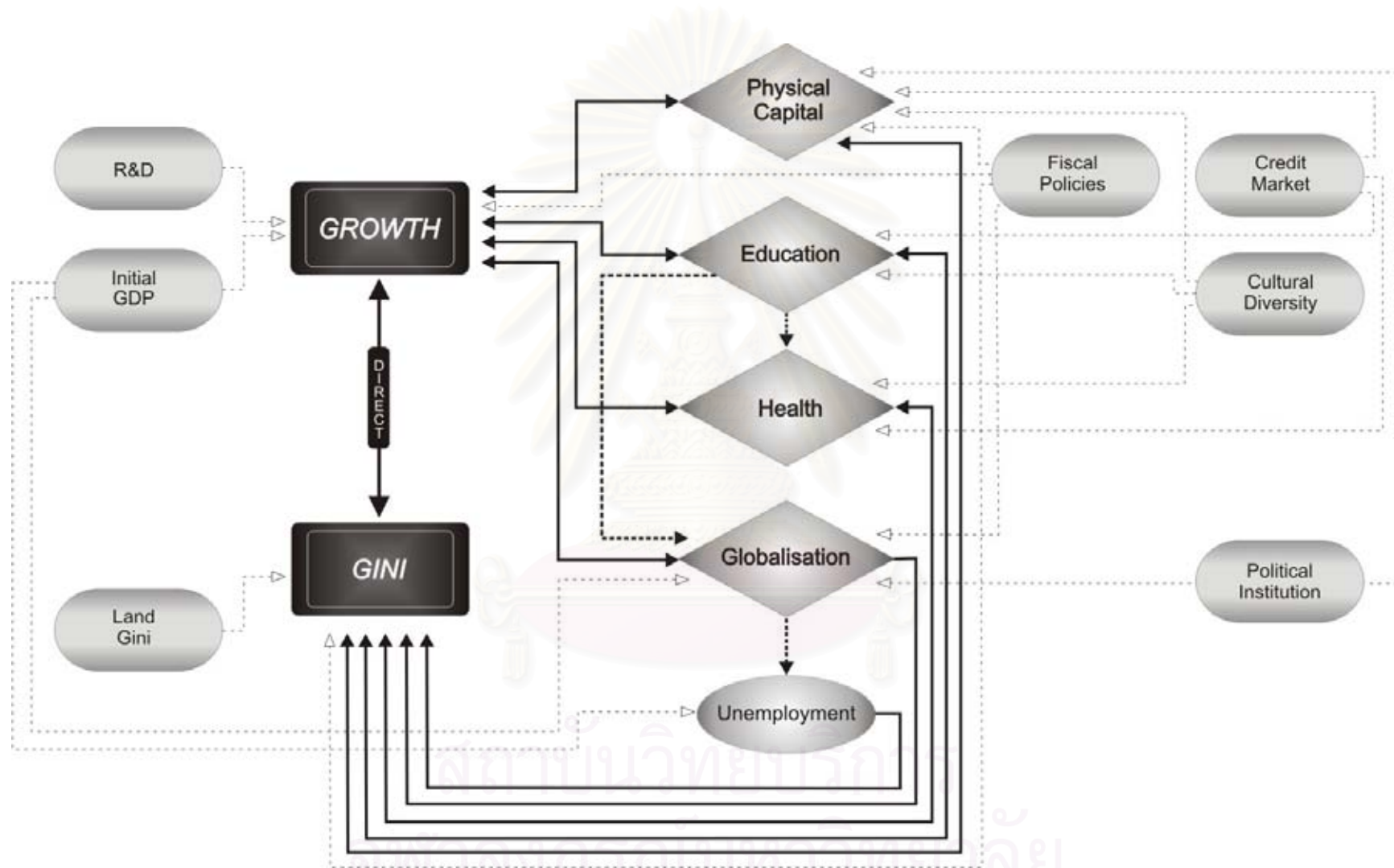


Figure 4.1 Inequality-growth diagrammatic framework

4.2 Modelling Framework

Theories and hypotheses outlined in the previous chapters have guided towards the bi-directional relationship between income distribution and economic growth. In a situation where the distribution of income is likely to directly and indirectly affect the growth rate as much as the growth rate that is also likely to affect the distribution of income, investigating these two causalities entirely independent of one another might not be appropriate and intuitive, since it does not take into account information provided by other equations in the system. In order to capture the linkages between income distribution and economic growth as previously described, this study sets up a model of simultaneous equations as follows:

$$\begin{aligned}
 GROWTH &= \alpha_{10} + \beta_{11} GINI + \beta_{12} INV + \beta_{13} \ln(SCHOOL) + \beta_{14} \ln(HEALTH) \\
 &+ \gamma_{11} GOV + \gamma_{12} TRADE + \gamma_{13} TRADE * \ln(GDP) + \gamma_{14} \ln(GDP) \\
 &+ \gamma_{15} RD + u_1
 \end{aligned} \tag{4.1}$$

$$\begin{aligned}
 GINI &= \alpha_{20} + \beta_{21} GROWTH + \beta_{22} INV + \beta_{23} \ln(SCHOOL) \\
 &+ \beta_{24} \ln(HEALTH) + \beta_{25} UNEMPLOY + \gamma_{21} GOV + \gamma_{22} TRADE \\
 &+ \gamma_{23} TRADE * \ln(GDP) + \gamma_{24} TAX + \gamma_{25} LANDGINI + u_2
 \end{aligned} \tag{4.2}$$

$$\begin{aligned}
 INV &= \alpha_{30} + \beta_{31} GROWTH + \beta_{32} GINI + \gamma_{31} TAX + \gamma_{32} CREDIT \\
 &+ \gamma_{33} INSTITUTION + \gamma_{34} DIVERSITY + u_3
 \end{aligned} \tag{4.3}$$

$$\begin{aligned}
 \ln(SCHOOL) &= \alpha_{40} + \beta_{41} GROWTH + \beta_{42} GINI + \gamma_{41} CREDIT + \gamma_{42} DIVERSITY \\
 &+ u_4
 \end{aligned} \tag{4.4}$$

$$\begin{aligned}
 \ln(HEALTH) &= \alpha_{50} + \beta_{51} GROWTH + \beta_{52} GINI + \beta_{53} \ln(SCHOOL) + \gamma_{51} CREDIT \\
 &+ \gamma_{52} DIVERSITY + u_5
 \end{aligned} \tag{4.5}$$

$$UNEMPLOY = \alpha_{60} + \gamma_{61} TRADE + \gamma_{62} TRADE * \ln(GDP) + \gamma_{63} \ln(GDP) + u_6 \quad (4.6)$$

Where α 's	=	constant terms
β s	=	structural coefficients for endogenous variables
γ s	=	structural coefficients for exogenous variables
u 's	=	disturbance terms
<i>GROWTH</i>	=	annual growth rate of real GDP per capita
<i>GINI</i>	=	Gini coefficient for income distribution
<i>INV</i>	=	real gross domestic investment as a percentage share of real GDP
$\ln(SCHOOL)$	=	natural log of average years of schooling in the population aged 15 and over
$\ln(HEALTH)$	=	natural log of healthy life expectancy
<i>GOV</i>	=	real government expenditure as a percentage share of real GDP
<i>TRADE</i>	=	real trade volume as a percentage share of real GDP
$\ln(GDP)$	=	natural log of real GDP per capita in 2000
<i>RD</i>	=	gross domestic expenditure on research and development (R&D) as a percentage share of GDP
<i>TAX</i>	=	taxes on income, profits, and capital gains as a percentage share of total government revenues
<i>LANDGINI</i>	=	Gini coefficient for agricultural land distribution
<i>UNEMPLOY</i>	=	total unemployment as a percentage share of total labour force
<i>CREDIT</i>	=	money and quasi-money as a percentage share of GDP
<i>INSTITUTION</i>	=	quality of political institutions
<i>DIVERSITY</i>	=	linguistic fractionalisation

The first equation represents the standard growth equation in which the growth rate of real GDP per capita is determined by various factors. Importantly, it includes the Gini coefficient which is supposed to account for any direct link between income

inequality and economic growth. The distribution of income can affect growth for the reason that it determines the allocation of resources and hence the economic efficiency. In addition to the physical capital level and the human capital levels measured in schooling and health status, government expenditure and research and development (R&D) expenditure also enter into the equation. Whereas government expenditure generally reflects the role of a country's government, R&D expenditure represents investment in advanced technology and innovation, both of which should influence a country's rate of growth. To capture the significance of international trade in economic growth, especially in this globalisation age, openness to trade is also included with its interaction with the initial level of GDP per capita in aiming to emphasise the benefits of trade openness which tend to be unevenly spread across countries. Furthermore, the level of real GDP per capita in the initial period is added to investigate the conditional convergence hypothesis. The convergence phenomenon, if exists, is a conditional one in that it predicts higher growth in a country with lower starting per capita GDP when the other explanatory variables are held constant.

The second equation represents the potential sources of inequality in the distribution of income. It states that income inequality depends on the level of economic performance and the levels of capital stock a country exhibits for the reason that these factors tend to have major impact on an individual's ability to earn income. Other determinants that should be included in the equation are fiscal policies, namely government expenditure and direct taxes collected since they tend to have direct effects on the existing income inequality. Besides, as far as the role of globalisation is concerned, an expansion of trading activities should also have a significant implication on income distribution. But since increased openness should not have the same effect on distribution regardless of the country and its level of development, an interaction term between trade openness index and the initial GDP per capita is entered into the equation. The number of unemployed labour relative to the total labour force should be added since it tends to deteriorate income distribution. To account for the effect of the initial inequality among the population on the current distribution, especially in low-

income countries where agriculture dominates, the way in which agricultural land are distributed initially is included in the inequality equation.

The next three equations stand for the accumulations of physical capital, educational capital and health capital, respectively. They are supposed to act as the potential channels that transmit any underlying causalities from income distribution to growth or from growth to income distribution. Other than the growth rate of GDP per capita and an inequality measure, the extent to which these three factors are accumulated in turn governs by a country's level of financial development, that is, whether greater financial depth lessens the credit constraint to borrow and helps provide efficient individuals with sufficient credit to start up prospective investments. Such investments should also be partly influenced by cultural diversity in that diversities are sometimes claimed to prevent some minority groups from engaging in those effective activities. The role of political factors such as the quality of political institution and tax policies also affect investors' confidence as well as incentives to invest especially in the case of physical capital, hence, they are added into the physical investment equation.

The last equation involves the causes of the prevailing unemployment level. It is likely that changes in unemployment reflect changes in the demand for and supply of labour. Thus, whereas the GDP per capita is intended to capture the effect of economic structural change during the industrialisation process, trade openness and its interaction are aimed to capture the effect of changes in specialisation and factor intensity in the production.

In the next step, foreign direct investment is included as another aspect of globalisation to account for any links between foreign capital, economic growth and the distribution of income. However, since physical capital investments incorporate both investments undertaken domestically as well as those flown from abroad, the physical capital accumulation variable has to be replaced by the foreign direct investment

variable to avoid any multicollinearity between them. Some modifications are applied as follows:

$$\begin{aligned}
 FDI &= \alpha_{70} + \beta_{71} GROWTH + \beta_{72} \ln(SCHOOL) + \gamma_{71} \ln(GDP) \\
 &+ \gamma_{72} TRADE + \gamma_{73} TAX + \gamma_{74} INSTITUTION + u_7
 \end{aligned} \tag{4.7}$$

Where FDI = foreign direct investment as a percentage share of GDP

A number of additional explanatory variables are included in the equation, which typically have been used in the studies on the determinants of FDI. Market growth is expected to have an impact on investment decisions since it implies high investment returns and therefore should be attractive to investors. The level of development in which a host country stays and the level of human capital it occupies are significant factors that can have influence on foreign investor's decision to invest. Another factor is the extent to which a host country is integrated with the global economy. Even if multinationals are likely to outsource to a relatively opened country whose labour is cheap and then export back to the home country and the rest of the world, they can also choose to invest in a country that is relatively closed so that they can penetrate into the domestic market easily. Moreover, whether a host country's political environment such as tax policy and institutional quality is regarded as a friendly or hostile one should matter in determining the foreign capital inflows.

4.3 Method of Estimation

Turning to the method of estimation, consider first a simple simultaneous-equation system with only two equations:

$$y_1 = y_2 \beta_1 + x_1 \gamma_1 + u_1 \tag{4.8}$$

$$y_2 = y_1 \beta_2 + x_2 \gamma_2 + u_2 \tag{4.9}$$

As illustrated, any changes in u_1 will lead to changes in y_1 in equation (4.8). These changes will immediately lead to changes in y_2 via y_1 in equation (4.9). Thus, y_2 is correlated with u_1 in the same way that y_1 is correlated with u_2 . The classical assumption of the zero covariance between the explanatory variables and the disturbance is violated. Estimation of such model using the ordinary least squares (OLS) method will lead to biased and inconsistent estimators. That is, as the sample size increases indefinitely, the estimators will not converge to their true population values. As a result, alternative estimating techniques specially designed for the simultaneous-equation model, in which some or all explanatory variables are endogenous, should be employed. The following discussions regarding the methods of estimation are based on Kmenta (1986) and Gujarati (2003).

Whether the simultaneous-equation system under consideration can be estimated relies crucially on the identifiability of structural equations. That is, it is whether the estimates of the structural coefficients can be obtained from the reduced-form coefficients, the problem which is known as the identification problem. If this can be done, then the estimation can be proceeded. It is also important that the number of the endogenous variables must be equal to the number of independent equations in the system, otherwise the values of these variables will not be determined.

There are two fundamental approaches commonly used to estimate a simultaneous-equation model, namely the single-equation methods of estimation and the system methods of estimation. The single-equation methods are designed to estimate any identified structural equation that is the focus of interest individually, taking into account any restrictions placed on that equation without concerning about the restrictions on the other equations in the system. Due to a limited reference to the rest of the system, they are also known as limited information methods.

One of the most well-known single-equation methods is that of two-stage least squares (2SLS). As the name suggests, this method consists of two successive applications of the ordinary least squares method. The first stage requires developing

the instrumental variables for all endogenous variables to get rid of any potential correlations. In doing so, each endogenous variable is regressed on all predetermined variables in the system to obtain its predicted value. The second stage involves estimating the structural equations with the use of the predicted endogenous variables obtained in the first stage as the instruments. The original value of the endogenous variable is replaced by its predicted value where such endogenous variable appears on the right-hand side as an explanatory variable in other equation. The OLS method of estimation is then carried out to attain the consistent estimates.

The single-equation estimation methods, although produce estimates that are consistent, in general, they are not asymptotically efficient because the correlations between the structural disturbances across equations are not taken into account implying that all the available information about each equation are not used. To deal with this problem properly, one has to resort to the system methods. The three-stage least squares (3SLS) method is the simplest system method used to estimate a simultaneous-equation system. Its underlying idea is to improve the efficiency of the estimates by taking into consideration the contemporaneous correlation between the disturbances of different equations and treating them as a set of seemingly unrelated equations.

The three-stage least squares estimation involves three consecutively stages. Following the two-stage least squares estimation, the first stage is to obtain the instrumental variables which are the predicted values of the endogenous variables regressed on all predetermined variables in the system. The second stage is to substitute such predicted values for their original values in equations that they appear as the explanatory variables and then performing the OLS estimation on those structural equations. By using the two-stage least squares residuals, consistent estimates of the variances and covariances of the structural disturbances of the equations can be achieved. Then, in the third stage, the instrumental variables and the estimated covariance matrix earlier obtained in the second stage are placed into the generalised least squares (GLS) estimating equation to obtain the three-stage least squares estimates of the system.

4.4 Data Description

Recent studies on the inequality-growth relationship sometimes exploit the panel data method in their analyses. A panel dataset combines both time-series and cross-sectional components and provides insightful information about the dynamics of the economy. However, panel datasets used in those studies are large in number of observations but small in time periods because of a lack of long time-series distributional data for individual countries. Also, whilst there may be considerable variation in income distribution across countries, there are less variation in distribution across short time periods.

The panel data regression model is usually estimated by using the fixed effects approach. In doing so, differences between countries are taken into account by employing dummy variables for each of the cross-sectional unit in order to allow for the intercept term to vary across countries. Nonetheless, when the fixed effects model is used, the results from the estimation are dominated by country's distributional variation across time rather than variation across countries. And as mentioned above that variation in income inequality across a short period of time is not substantial; panel data method may not be informative. The estimated parameters in this type of model are conditional on the country and time effects in the selected sample; they cannot necessarily be applied to other samples of data. Estimation with fixed effects using only developed country data might say little about the distribution of income in developing countries in the future (Greene, 2000).

Such limited variation over time suggests that the long-run impact on economic growth is best explored using the cross-section variation. A cross-sectional analysis attributes variation in income inequality to variation in the level of income across countries. That is, it looks across different countries at the same points in time and examines how the pattern of income inequality varies in moving from lower-income countries to higher-income ones.

In short, in spite of an advantage in principle over a cross-sectional analysis in distinguishing country effect and time effect, given data limitations, panel data method may not be very useful. Moreover, even though the interconnection between income distribution and economic growth tends to be case-specific, international comparative studies can still be useful in providing some notion of regularities across countries. Analysis in this study therefore is based on cross-country data for the period 2000-2004.

However, if there exists a high-quality dataset covering long-enough time periods, from policy-implication point of view, it would be more desirable and more informative to investigate the interconnection between these two factors by employing this type of dataset. In doing so, a country's individual characteristics would be carefully accounted for so that specific and efficient policies can be drawn. Fortunately, in the case of Thailand, there exists a high-quality dataset, the Socio-Economic Survey (SES), which is conducted on household based and available in every two years from 1986 to 2006. Therefore, in chapter six and seven, the Thai panel dataset is scrutinised.

The data used in this study are compiled from various sources, but largely they are obtained from the Penn World Table version 6.2 in Heston, Summers and Aten (2006) and the World Bank's World Development Indicators (various years). The sample covers 188 countries including both developed and developing countries. The data for 2000 - 2004 are computed as averages wherever available to avoid very short-run changes. Summary statistics of all variables are reported in table 4.1.

There are six dependent variables in the model, namely, growth, inequality, investment, education, health and unemployment. The growth rate is the annual rate of growth of real per capita GDP between 2000 and 2004. It is based on real per capita GDP in 2000 constant U.S. dollars expressed in international prices, of which are drawn from the Penn World Table version 6.2 of Heston et al. (2006). One advantage of these GDP data is that they are defined in purchasing power parity term, which refers to the number of currency units required to buy goods equivalent to what can be brought with one unit of the base country, real comparisons can be made across countries over time.

Table 4.1 Descriptive statistics

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
<i>GROWTH</i>	183	1.9852	4.1960	-20.48	21.28
<i>GINI</i>	129	40.5315	9.7558	24.70	74.33
<i>INV</i>	188	13.6046	7.6740	1.80	45.85
<i>SCHOOL</i>	104	6.1993	2.8391	0.84	12.05
<i>HEALTH</i>	182	54.9089	11.3233	25.76	73.49
<i>GOV</i>	188	23.7455	11.5725	2.55	79.57
<i>TRADE</i>	188	92.5408	52.9218	2.17	403.80
<i>GDP</i>	188	9,133.0650	9,397.019	359.1472	48,217.27
<i>RD</i>	96	0.9258	0.9595	0.01	4.76
<i>LANDGINI</i>	59	65.6300	15.6700	33.85	92.30
<i>TAX</i>	116	32.3827	16.9093	3.80	90.13
<i>UNEMPLOY</i>	120	9.4894	6.2192	1.14	33.74
<i>CREDIT</i>	162	50.8409	40.9135	5.16	238.51
<i>INSTITUTION</i>	183	59.0740	32.1296	0.00	100.00
<i>DIVERSITY</i>	177	38.7036	28.1588	0.21	92.27
<i>FDI</i>	166	6.6329	27.8633	-0.99	356.41

The Gini index, expressed in percentage term, is used to measure the degree of income inequality in a country. It is provided by the World Bank's World Development Indicators, of which the distributional data come from nationally representative household survey adjusted for household size. However, these indices are not strictly comparable across countries for the reason that differences in method and type of data collected, in particular, whether the index is based on income or consumption expenditure seem to affect empirical application significantly. Rather than tied to short-term fluctuations in income, consumption expenditure tends to be smoother and less varied; distribution measures based on consumption therefore are likely to reflect lower inequality than those based on income. According to Deininger and Squire (1996), the

mean difference between consumption-based Gini coefficients and those based on gross income is surprisingly 6.6 percentage points. To ensure that the data are as comparable as possible, the World Bank employs consumption expenditure wherever possible in attaining the high quality inequality indices, or else the income has been used.

Another major problem with the distributional data is that they are subject to limited availability; only few observations can be found during 2000 to 2004. Moreover, for developing countries like Botswana, Central African Republic, Guinea-Bissau, Namibia and Trinidad and Tobago and even for some developed countries like Australia and Japan, data for inequality are based on household surveys conducted in the early 1990s. Considering the availability of the data and the less variation in inequality across a short period of time, it is reasonable to expand the sample size by employing decadal data for 1995 – 2004, except for those seven countries that the latest data available were dated back prior to 1995.

The investment ratio is the ratio of real gross domestic investment, including both private and public, to real GDP. They come from Heston et al. (2006) and enter into the regressions as 5-year averages for 2000 - 2004. This variable afterwards is substituted by the foreign direct investment net inflows. The net inflows of investment are calculated by the World Bank using the International Monetary Fund (IMF)'s Balance of Payments database. They comprise of equity capital, reinvestment of earnings and other short- and long-term capital and are measured as an average percentage share of GDP in 2000 – 2004.

The educational attainment variable is defined as the average years of schooling in the total population aged 15 and over. They are the years of formal schooling achieved by the average person. Information on school participation and attainment are provided by Barro and Lee (2000). Due to the data limitation, they are evaluated in 2000 in the form of natural logarithm.

The health status is measured by healthy life expectancy at birth. Unlike other studies that employ ordinary life expectancy at birth - the number of years that a newborn infant can expect to live based on the current patterns of mortality, this study applies the World Health Organisation's healthy life expectancy, which has adjusted for the time spent in poor health in order to truly reflect the prevalence health state of the population. Similar to the education variable, this variable is calculated in the logarithmic form and is observed at 2000.

Unemployment refers to the numbers of labour force who are without work but available for and seeking employment, expressed as a percentage of the total labour force. It includes those who have lost their jobs and have voluntarily left work. Data on unemployment are provided by the World Bank's World Development Indicators, which in turn are drawn from the International Labour Organisation (ILO). The unemployment variable is the average value of 2000 – 2004. It should be noted that measuring unemployment is problematic in itself in that definitions of labour force and unemployment may differ across countries. Also, employment in the informal sector as well as employment and unemployment in agriculture, especially in many developing countries, are difficult to measure.

Other following variables are exogenous variables. One government related variable is a percentage share of real government expenditure in real GDP drawn for the Penn World Table version 6.2. Another indicator employed to capture any investment incentives or disincentives provided by government is taxes on income, profits and capital gains as a percentage share of total government revenues. These taxes are levied on the net income of individuals, the profits of corporations and enterprises and the gains from capital. Again, the data are provided by World Development Indicators, of which are compiled by the IMF's Government Finance Statistics and are entered into the regressions as 2000 – 2004 averages.

As for the globalisation measures, the volume of trade - the sum of exports and imports of goods and services - as a percentage in real GDP is employed to capture the

extent to which a country is integrated into the global economy via international trade. Both variables are compiled by Heston et al. (2006) and entered as averages for 2000 – 2004.

The initial per capita GDP, also drawn from the Penn World Table version 6.2, is the real per capita GDP for 2000 entered in the logarithmic form. The expenditure for R&D, available from the World Development Indicators, is used to reflect some part of a country's investment in technological knowledge and innovation. It comprises of both capital expenditures and current costs such as wages and salaries of researchers and technicians. The variable is computed as a percentage share of GDP averaged over 2000 – 2004.

The initial distribution of asset is measured by the Gini index calculated in percentage term for the distribution of operational holdings of agricultural land. It is taken from Deininger and Olinto (1999), of which is an average value for 1960 – 1970.

The state of financial development is represented by the ratio of money and quasi money (M2) to GDP. This definition of money supply encompasses currency held by the public, demand deposits as well as time and saving deposits with banks and foreign currency deposits of resident sectors other than the central government. The financial depth data come from World Development Indicators which in turn are drawn from the IMF's International Financial Statistics. Like other variables, this variable is a 5-year average of the period 2000 – 2004.

The quality of political institutions can be indicated by political rights and civil liberties indices compiled by the Freedom House (2006). Whereas political rights represent freedoms that allow individuals to engage in political activities, civil liberties represent freedoms that protect individuals from the government's power and interference. Both indicators are measured on scale from 1 to 7 with higher numbers indicating fewer rights. Helliwell (1994) merges these two indicators into a single variable that represents the quality of political institution, ranged from 0 to 1 as follows:

$$INSTITUTION = \frac{14 - (\text{Political Rights} + \text{Civil Liberties})}{12} \quad (4.10)$$

In this study, the variable is computed in terms of percentage, ranges from 0, no political rights and civil liberties, to 100, full set of political rights and civil liberties. Lower rights can result in more corruption, greater state interference or weaker property rights, which can subsequently lead to political conflict and instability.

The last variable involves cultural diversity. To capture the degree of prevailing cultural diversity in a country, this analysis uses data for linguistic fractionalisation based on the probability that two randomly selected individuals from a population belonged to different linguistic groups computed by Alesina et al. (2003) according to

$$DIVERSITY = 1 - \sum_{i=1}^n s_i^2 \quad (4.11)$$

Where s_i is the share of linguistic group i in a country. This variable is approximated at 2001 and enters as a percentage term.

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CHAPTER V

EMPIRICAL ANALYSIS: CROSS-COUNTRY EVIDENCE

This chapter provides the empirical results obtained from estimating a simultaneous-equation system in which the cross-country dataset for 188 countries are employed. It begins with the estimated results from the standard model and then turns to the modified models that take into account the roles of export structure and foreign direct investment with main findings summarised accordingly.

5.1 Empirical Results from the Cross-Country Dataset

In this study, income distribution and economic growth are modelled in a way that not only presents the direct effects on each other, but it also aims to capture the indirect effects between these two factors through underlying factors. In this regard, the direct effects of inequality on growth and of growth on inequality are firstly presented. The indirect effects of inequality on growth and of growth on inequality, which are conveyed by other key indicators, are then followed.

5.1.1 Direct Effect

The estimation results of equations (4.1) – (4.6) by using the three-stage least squares (3SLS) method are presented in table 5.1. Consider first the standard growth equation shown in column 1. This study finds no significance for all policy variables, with the exception of income distribution and education. The estimated coefficient on the Gini index in column 1, which equals -0.25, shows that income inequality is significantly harmful to economic growth. This result means that a one percentage point decrease in the Gini index raises the real per capita GDP growth by 0.25 percentage points per year.

A striking finding lies in the educational attainment variable, measured by the average years of schooling of the labour force, which enters negatively in the growth

equation. The estimated coefficient of -6.99 implies that an additional year of schooling tends to lower the rate of growth by 1.13 percentage points per year on average. This finding contradicts the view that expanding education promotes economic growth as suggested in the augmented Solow model and the new growth theories. However, the negative effect of education on growth is robust to the use of alternative educational attainment indicators such as the schooling attainment rates and the schooling completion rates. As surprising as these negative results may seem, they are similar to what other researchers have found in examining the relationship between education and growth.

By running a standard growth accounting regressions to examine evidence of determinants of economic growth, Benhabib and Spiegel (1994) finds that estimates of years of schooling in the labour force has an insignificantly and usually negative effect in explaining per capita growth rates across countries. Likewise, Pritchett (2001) uses the similar growth accounting approach and also finds there are no association between increase in the educational attainment of the labour force and the rate of growth. Results from both previous studies on the simultaneous relationship between income distribution and economic development – Lundberg and Squire (2003) and Fielding and Torres (2006) - also show a negative correlation between education and economic growth.

As for the investment ratio, its estimated coefficient in column 1 is positive but statistically insignificant. This result contrasts with other empirical results typically found in the growth regressions. One principal reason for such low explanatory power of the real gross domestic investment is the reverse causality from growth to investment, rather than from investment to growth as shown in column 3. Turning to another indicator of human capital as represented by healthy life expectancy at birth, the estimated coefficient is positive but statistically insignificant. Like the investment ratio, this may due to the reverse causality from growth to health status as shown in column 5.

Table 5.1 Three-stage least squares estimates from the cross-country dataset

Explanatory Variable	Dependent Variable					
	(1) <i>GROWTH</i>	(2) <i>GINI</i>	(3) <i>INV</i>	(4) <i>ln(SCHOOL)</i>	(5) <i>ln(HEALTH)</i>	(6) <i>UNEMPLOY</i>
<i>Constant</i>	-2.9153 (-0.13)	-94.2642** (-2.44)	20.5435** (3.66)	2.9582** (10.27)	1.9087** (8.96)	14.2515** (3.11)
<i>GROWTH</i>		-1.3141** (-3.30)	0.9926** (3.70)	-0.0067 (-0.44)	0.0156* (1.92)	
<i>GINI</i>	-0.2530** (-3.05)		-0.3768** (-3.23)	-0.0271** (-4.19)	0.0134** (3.69)	
<i>INV</i>	0.1619 (1.17)	-0.5749** (-2.33)				
<i>ln(SCHOOL)</i>	-6.9876** (-1.99)	-22.0344** (-3.49)			0.8424** (15.16)	
<i>ln(HEALTH)</i>	4.0312 (0.52)	40.8141** (3.31)				
<i>GOV</i>	-0.0121 (-0.44)	-0.1021 (-1.45)				
<i>TRADE</i>	0.0690 (1.50)	0.0651 (0.76)				0.0197 (0.40)
<i>TRADE *ln(GDP)</i>	-0.0071 (-1.46)	-0.0035 (-0.39)				-0.0030 (-0.56)
<i>ln(GDP)</i>	1.1268 (1.23)					-0.4906 (-0.94)
<i>RD</i>	-0.8821 (-1.44)					
<i>TAX</i>		0.0560 (0.84)	0.1349** (3.67)			
<i>LANDGINI</i>		-0.0059 (-0.08)				
<i>UNEMPLOY</i>		2.0052** (2.81)				
<i>CREDIT</i>			0.0219** (2.10)	0.0019** (2.67)	-0.0001 (-0.26)	
<i>INSTITUTION</i>			0.0410** (3.00)			
<i>DIVERSITY</i>			-0.0399** (-2.53)	-0.0051** (-5.17)	0.0009 (1.47)	
<i>N</i>	188	188	188	188	188	188

Note: Z-statistics in parentheses; ** significant at 5 per cent level; * significant at 10 per cent level

The estimated coefficient on the role of government in determining a country's growth as measured by the percentage share of government consumption in real GDP shows no significant effect on the growth rate. This may be because data for government consumption comprise expenditures on goods and services for current consumption as well as those for collective consumption and also include expenditures on national defence and security. The failure to distinguish productive expenditures, which should have positive impacts on economic growth, from non-productive ones, which, in contrast, should have negative impacts, thus results in the ambiguous effect of government consumption found in this study.

In contrast to the convergence hypothesis that predicts a negative coefficient on the initial value of per capita GDP that reflects higher growth in countries with lower starting per capita GDP, the estimated coefficient on the logarithm of per capita GDP shows no sign of the conditional convergence, instead implies a divergence.

However, the negative estimate on the percentage share of research and development expenditures in GDP, to some extent, implies that countries starting out with lower technological progress tend to grow faster than technological advanced ones. Differences in technology are believed to account for differences in the growth rates across different parts of the world. In particular, lagged behind countries can take more advantage of differences in the rate of technology diffusion and the larger technological gap between technologies being developed at home and those new ideas being innovated in the rest of the world. They thus can benefit from the adoption and imitation of superior technologies and innovation transferred from more advanced countries.

The results for the standard globalisation variable, namely trade openness, show that the sum of exports and imports in real per capita GDP is positively related to the growth rate, however, its benefits are lessened for higher-income countries since the interaction term between trade openness and GDP is negative. It is only when the real GDP per capita rises continually until it reaches 16,500 U.S. dollars in purchasing power

terms, that is, around the income level of Barbados and Oman, that international trade becomes harmful to economic growth. Lower than average income countries like Thailand and Mexico whose per capita incomes are approximately 6,500 and 8,100 U.S. dollars, respectively, therefore tend to benefit from opening up to trade.

Looking from another side of the analysis, the estimates of the inequality equation shown in column 2 also illustrate some important findings. The estimated coefficient on the growth rate, which equals -1.31, is significantly negative meaning that a higher growth rate per year contributes greatly to an improvement in the distribution of income: a one percentage point increase in the rate of growth of real per capita GDP helps lower the Gini index by 1.31 percentage points. That is, benefits from a country's higher economic growth are transferred to the population in a society more equally. Individuals with lower income levels also gain from such rise in the growth rate.

And despite the low ability to explain the annual growth rate, the physical capital accumulation turns out to be a significant factor in determining income distribution. The estimate of -0.57 implies that a one percentage point increase in the ratio of real gross domestic investment to real GDP reduces the inequality measure by 0.57 percentage points. This finding implies that higher level of physical capital in the market enables a larger fraction of population to access to the available capital and perform productive investments that help increase their income.

Likewise, the educational capital, measured by schooling years of the adult population, also significantly contributes to the way in which income is distributed throughout an economy. The estimated coefficient on the averages years of schooling in column 2 that equals -22.03 means that an additional year increase in the average total schooling years of the labour force leads to a reduction in the Gini index by 3.55 percentage points on average. The negative effect of education on income inequality is in line with the notion that individuals with more education are likely to have higher wages, therefore, if more individuals are educated, average income should rise and then bring down income disparity, especially when there are positive externalities to

education. In light of this view, it should also be the case that educational capital helps enhance economic growth, however, this seems to be inconsistent with the negative effect of education found earlier in column 1. Taken together, it is likely that higher educational attainment improves income distribution but does not automatically raise the growth rate.

Contradict to education, the estimated coefficient on the accumulation of human capital in health status implies a positive impact of health on income inequality. The estimate of 40.81 indicates that an additional year increase in healthy life expectancy at birth strangely augments the prevailing inequality index by 0.74 percentage points. Human capital in a form of health may itself not equally distributed. Superior health services seem to benefit only a small group of people whose income is relatively high so that they can afford the cost of such services. This situation is usually observable particularly in countries that the market for healthcare is liberalised. A rise in healthy life expectancy hence exacerbates the prevailing income inequality.

Another significant determinant of income distribution that has been overlooked in other analyses is the share of unemployed labour in the total labour force. The magnitude of the estimated coefficient of 2.01 is relatively large: a one percentage point increase in the unemployment rate causes a rise in the Gini index by 2.01 percentage points. A country in which the rate of unemployed labour is high tends to exhibit a high level of income inequality since the higher share of labour force who are without work exacerbates the existing differences in income between individuals at the upper-end of the distribution and those individuals at another extreme lower-end who do not accrue to any income share at all.

The other remaining explanatory variables in the inequality equation, nonetheless, show no significant impact on income inequality. In the case of fiscal policies, the ratio of real government expenditure to real GDP and the share of taxes on income, profits and capital gains in total government revenues are unlikely to cause any changes to the Gini index. The globalisation indicator in a form of trade openness and

its interaction also enter into the regression insignificantly. However, their corresponding signs somehow suggest a Kuznets effect of openness on income distribution, that is, increased openness tends to widen income inequality in countries with relatively low income levels but such inequality is likely to lessen and ultimately narrow down as income level increases. Despite the findings that low-income countries are likely to benefit more from trade in terms of higher growth, but in terms of income distribution, such favourable effect is not likely. Such low-income countries, in contrast, tend to have a worsened income distribution implying that gains from international trade are not evenly distributed among the population.

As for the distribution of agricultural land, the result shows that the extent to which agricultural land is initially distributed among the population does not pose any significant impact on income distribution in the current period. This may be due to the fact that agriculture has contributed to a smaller part of today's economy relatively, agricultural land, which has been considered as a major asset in agrarian economies, therefore tends to have less and less important role accordingly. Rather, it is human capital that has been increasingly regarded as a key asset in determining individuals' productive capacity and their ability to acquire income.

5.1.2 Indirect Effect

The results from this analysis demonstrate that income distribution and economic growth not only directly affect each other as shown in columns 1 and 2, but they also interact with one another indirectly through other factors. These major factors, considered as potential channels through which income distribution and growth can be linked are the physical capital accumulation and the human capital accumulation in forms of education and health status.

Begin with the causality running from growth to income distribution, in the case of physical capital investment, the estimate in column 3 shows that, rather than contributing to growth, it is economic growth that indeed influences the level of physical

capital accumulated. The estimated coefficient of 0.99 on the growth rate is significant, suggesting that a one percentage point increase in the real per capita GDP growth raises the share of real gross domestic investment in real GDP by 0.99 percentage points, other things being constant, the increased investment ratio in turn indirectly lowers the Gini index by 0.57.

This finding is also applicable to the case of human capital as measured by healthy life expectancy at birth in column 5. The estimated coefficient on the growth variable which equals 0.016 is statistically significant, implying that instead of fuelling economic growth, it is the faster growth that leads to higher life expectancy: a one percentage point increase in the rate of growth of real GDP per capita raises the healthy life expectancy by 0.86 years. But with a positive relationship between better health condition and income inequality found in column 2, a rise in the growth rate thus indirectly transmits onto greater income inequality via an improvement in health which is possibly concentrated in the upper-income group..

On the contrary, as presented in column 4, economic growth does not have any significant impact on the educational attainment variable. The low explanatory power of estimated coefficient on the growth rate indicates that a higher growth in real per capita GDP fails to increase the accumulation of educational capital measured in the average years of schooling in the adult population.

Turning to the causality running from income distribution to economic growth, the estimated coefficients on the Gini index shown in columns 3 - 5 also reveal the potential indirect effects of the distribution of income on economic growth. Such estimate in column 3 shows that a one percentage point decrease in the Gini index raises the ratio of gross domestic investment to real GDP by 0.38 percentage points. However, since the investment ratio is less likely to contribute to growth, a reduction in the Gini index and thereby increased physical capital investment are not likely to have any significant indirect effect on economic growth.

In the same way for the estimated coefficient of -0.027 on the inequality measure in column 4, a one percentage point decrease in the Gini index augments the average years of schooling by 0.17 years. In this case, changes in such educational capital also significantly lead to changes in the growth rate. An increase in the averages schooling years in the adult population resulted from lower income disparity within a country tends to indirectly cause the rate of growth to diminish.

Income inequality, on the other hand, is found to be positively related to health status. As shown by the estimated coefficient of 0.013 in column 5: a one percentage point decrease in income inequality as measured by the Gini index significantly reduces the expected living years of the newborn child by 0.74 years. Like the accumulation of physical capital, the accumulation of health capital is less likely to boost economic growth than other way around, hence, a reduction in inequality and a corresponding better health condition do not convey any important implication on economic growth.

In addition to the three main factors, namely physical capital investment, educational investment and health investment, believed to be the key channels that link income distribution and growth together, there are still other factors that in turn govern the evolutions of these key channels and, as a result, should have significant implications on the inequality-growth linkage. The first determinant that significantly affects the physical capital and the human capital accumulated is the extent to which financial resources are available in the market. Measured by the ratio of money and quasi-money (M2) to GDP, the estimated coefficients of 0.02 and 0.002 in columns 3 and 4 respectively means that a one percentage point increase in the money supply significantly improves the gross domestic investment ratio by 0.02 percentage points and at the same time expands the average years of schooling by 0.012 years. Even if credit is an important factor that finances productive investment and capital formation, in the case of human capital in health, it does not play any crucial role. It is possible that individuals normally perceive health as an asset that is far less tangible than physical capital investment or educational attainment, borrowing to improve their health status is therefore unlikely.

The second determinant is the cultural diversity measured by linguistic fractionalisation. The negative impact of cultural fragmentation is pronounced in the sense that it lowers the accumulations of physical capital and educational capital. A one percentage point increase in the probability that two randomly selected individuals belonged to different linguistic groups reduces the investment ratio by 0.04 percentage points and lowers the educational attainment by 0.03 years. However, in the health equation, the estimated coefficient is positive but statistically insignificant.

In the case of physical capital investment, in particular, political factors are also essential in determining the level of investment in an economy. This is because government policies as well as institutional environment can provide investment climate that can stimulate or discourage incentive to invest. As the result in column 3 suggests, a one percentage point increase in the share of taxes on income, profits and capital gains in the central government revenues boosts the investment ratio by 0.13 percentage points. At the same time, a one percentage point increase in the political freedom also encourages the accumulation of physical capital by 0.04 percentage points.

Another key factor that contributes largely to health is education. The estimated coefficient on schooling is significantly positive, meaning that higher educational attainment leads to better health status in the population: a rise in the average year of schooling by one year helps expand the child's expected years to live by 7.46 years. This may be because better education may improve standard of hygiene and may be associated with lower fertility and infant mortality, all of which help raise a child's life expectancy at birth.

Finally, this study finds no significant effect of explanatory variables on unemployment. This may due to the problem in measuring unemployment as outlined in the previous chapter, of which cannot truly reflect the incidence of unemployed workers. Low unemployment rates can often disguise unemployment in agriculture especially in many developing countries while high unemployment rates can occur in highly

developed countries with well-developed social safety nets. The globalisation and the stage of development variables therefore are less likely to have any significant influence on the unemployment rate.

5.2 Empirical Results with the Export Structure

This study also takes another step further by closely investigating the context of globalisation in the inequality-growth relationship. It firstly takes the structure of merchandise exports into consideration and tests whether differences in such structure matter in determining income distribution and economic growth across countries. Using data on international trade compiled by the United Nations Statistics Division, which are made available in the World Bank's World Development Indicators, merchandise exports can be largely categorised into five groups according to the Standard International Trade Classification (SITC) revision 1: food, agricultural raw materials, fuels, ores and metals, and manufactures. Of the most interesting are mineral fuels that include coal, petroleum, natural and manufactured gas and electric energy. To analyse whether these invaluable resource extractive industries produce the so-called Dutch disease that is harmful to growth as previously argued, the share of fuel products being exported in the total exports are included in the growth and inequality equations. The results are presented in table 5.2.

While the signs of other estimates are largely unaffected, the estimated coefficient on the percentage share of fuel exports in the total merchandise exports as shown in column 7 directs towards the Dutch disease hypothesis. Even if the explanatory power is relatively low, it still indicates some interesting point: an increase in the fuel exports tends to lower the rate of growth to some extent. As for the effect on the distribution of income, it is found that the estimated coefficient as shown in column 8 also lends support to the abovementioned hypothesis. A higher share of fuel exports in the total exports is likely to alleviate the income inequality problem.

Table 5.2 Three-stage least squares estimates with fuel exports

Explanatory Variable	Dependent Variable					
	(7) <i>GROWTH</i>	(8) <i>GINI</i>	(9) <i>INV</i>	(10) <i>ln(SCHOOL)</i>	(11) <i>ln(HEALTH)</i>	(12) <i>UNEMPLOY</i>
<i>Constant</i>	9.2407 (0.48)	90.6889** (-3.02)	20.0007** (3.65)	2.8942** (10.14)	2.1878** (10.81)	13.5809** (2.91)
<i>GROWTH</i>		-0.8533** (-2.26)	1.0565** (4.01)	-0.0061 (-0.40)	0.0147* (1.92)	
<i>GINI</i>	-0.2262** (-2.66)		-0.3681** (-3.24)	-0.0256** (-4.00)	0.0101** (2.95)	
<i>INV</i>	0.2004 (1.40)	-0.8938** (-3.09)				
<i>ln(SCHOOL)</i>	-4.6981 (-1.62)	-19.3313** (-4.23)			0.7647** (14.22)	
<i>ln(HEALTH)</i>	-0.2860 (-0.04)	40.0051** (4.36)				
<i>GOV</i>	-0.0104 (-0.38)	-0.0910 (-1.62)				
<i>TRADE</i>	0.0540 (1.20)	0.0657 (0.91)				0.0254 (0.51)
<i>TRADE *ln(GDP)</i>	-0.0057 (-1.18)	-0.0039 (-0.53)				-0.0036 (-0.67)
<i>ln(GDP)</i>	1.1216 (1.21)					-0.4131 (-0.78)
<i>RD</i>	-1.1061* (-1.88)					
<i>TAX</i>		0.1177* (1.84)	0.1306** (3.53)			
<i>LANDGINI</i>		0.0175 (0.28)				
<i>UNEMPLOY</i>		1.5338** (3.48)				
<i>CREDIT</i>			0.0212** (2.19)	0.0020** (2.77)	-0.0000 (-0.01)	
<i>INSTITUTION</i>			0.0426** (3.26)			
<i>DIVERSITY</i>			-0.0361** (-2.39)	-0.0051** (-5.18)	0.0005 (0.85)	
<i>FUEL</i>	-0.0076 (-0.55)	-0.0407 (-1.49)				
<i>N</i>	188	188	188	188	188	188

Note: Z-statistics in parentheses; ** significant at 5 per cent level; * significant at 10 per cent level

This contrast to the argument that natural resource export sector tends to worsen income inequality since it is concentrated in very few groups of people and pays extremely high wages and salaries to their workers. The negative relationship found between inequality and growth may arise due to the fact that those resources nowadays are most often publicly appropriated rather than privately appropriated as they had been in the past, except for some countries like Nigeria. Despite the equalising effect on income distribution, it should be noted that by shifting economic resources away from manufacturing may cause further damage on the long-term growth since the manufacturing sector is one of the main sources of human capital development.

5.3 Empirical Results with Foreign Direct Investment

In addition to the structure of exports, another aspect of globalisation, captured by foreign direct investment (FDI) inflows are also taken into account. For the reason of data collection outlined in the previous chapter, when FDI are included in the analysis, the investment ratio has to be removed to avoid any potential multicollinearity between these two factors. By replacing the physical capital equation (4.3) with the FDI equation (4.7) in the simultaneous-equation system and applying the method of three-stage least squares, the results as presented in table 5.3 are achieved.

When FDI is employed as another measure of globalisation, it exhibits some important implications on the inequality-growth relationship. Even though the estimated coefficient on the inflows of FDI in column 13 is statically insignificant, its positive value implies that FDI partly helps boost economic growth of the host country. In general, the estimated coefficients of the model in which FDI is included and those of the previous one do not exhibit much difference in terms of signs and magnitudes. However, when both aspects of globalisation are included in the growth equation, the role of FDI seems to outshine the importance of trade openness as borne out by the relatively small and less significance of the trade estimates.

Table 5.3 Three-stage least squares estimates with FDI

Explanatory Variable	Dependent Variable					
	(13) <i>GROWTH</i>	(14) <i>GINI</i>	(15) <i>FDI</i>	(16) <i>ln(SCHOOL)</i>	(17) <i>ln(HEALTH)</i>	(18) <i>UNEMPLOY</i>
<i>Constant</i>	-23.9384 (-1.10)	-1.1558 (-0.03)	-13.6925 (-0.91)	2.6625** (9.18)	1.9918** (9.58)	12.1139** (2.78)
<i>GROWTH</i>		-1.8937** (-5.23)	0.8585 (0.77)	-0.0024 (-0.16)	0.0149* (1.91)	
<i>GINI</i>	-0.3555** (-4.20)			-0.0205** (-3.17)	0.0103** (2.91)	
<i>FDI</i>	0.0494 (1.01)	-0.2509** (-2.67)		0.0011 (0.75)		
<i>ln(SCHOOL)</i>	-6.0422 (-1.61)	-11.6696 (-1.58)	-56.9115** (-3.99)		0.8689** (15.66)	
<i>ln(HEALTH)</i>	15.5724** (2.24)	6.4169 (0.48)				
<i>GOV</i>	-0.0194 (-0.66)	-0.2153** (-2.82)				
<i>TRADE</i>	0.0029 (0.04)	-0.1785 (-1.24)	0.1542** (3.95)			0.0353 (0.73)
<i>TRADE *ln(GDP)</i>	-0.0008 (-0.10)	0.0290* (1.78)				-0.0047 (-0.91)
<i>ln(GDP)</i>	-1.1129 (-1.16)		11.2680** (2.96)			-0.2430 (-0.49)
<i>RD</i>	-1.2256** (-2.33)					
<i>TAX</i>		-0.0661 (-1.17)	0.0784 (0.49)			
<i>LANDGINI</i>		0.0411 (0.49)				
<i>UNEMPLOY</i>		4.1663** (5.71)				
<i>CREDIT</i>				0.0025** (3.39)	-0.0005 (-1.35)	
<i>INSTITUTION</i>			0.0882 (1.46)			
<i>DIVERSITY</i>				-0.0055** (-5.44)	0.0013** (2.24)	
<i>N</i>	188	188	188	188	188	188

Note: Z-statistics in parentheses; ** significant at 5 per cent level; * significant at 10 per cent level

Although the explanatory power of FDI in growth is low, foreign investment tends to affect the distribution of income of the host country in a significant way. The estimated coefficient of -0.25 in column 14 means that a one percentage point increase in the share of FDI inflows in GDP reduces the Gini index by 0.25 percentage points. With the presence of multinationals, rather than deteriorating income distribution, openness to trade tends to have a favourable impact on the distribution particularly in the low-income countries.

As for the equation of FDI itself, the results from column 15 show that there are three variables that can determine the level of foreign capital inflows. The first variable is educational capital. The estimated coefficient on the average years of schooling of -56.91 suggests that an additional year in schooling significantly lowers the FDI inflows by -9.18 percentage points. This finding seems to be in line with the argument that a country in which plenty of unskilled labour are available at the lower wage rates, as implied by the lower level of educational attainment, tends to attract more foreign capital inflows than a skill-abundance one.

The second variable is the degree of a country's openness to international trade. As the estimate shows, a one percentage rise in the trade volume as a percentage share of real GDP increases the share of FDI inflows in GDP by 0.15 percentage points. That is, a country considered as relatively open is likely to attract more inflows of FDI than that considered as relatively close.

The level of development a host country is initially laid in is another potential factor that influences the foreign investor's decision to invest. The estimated coefficient of 11.27 means that a one percentage point increase in the real GDP per capita encourages the inflows of FDI by 0.11 percentage points. This is because higher development level, as measured by income per capita, in part, can reflect a well-developed market economy, better infrastructure or good institutional environment that can facilitate business activities.

Other explanatory variables, however, do not have any significant impact on the share of FDI inflows in GDP. The growth rate of GDP per capita enters the equation positively but statistically insignificant. Together with the estimate on FDI obtained from column 13, it is more likely that foreign direct investment somehow helps boost growth than other way around. Political variables, measured as taxation and institutional quality, also show no major effect on the inflows of FDI.

5.4 Main Findings

Overall, the estimation results point out some important implications. Income distribution and economic growth are indeed directly affected each other. The negative relationship found between them, nevertheless, does not imply that by varying one variable would automatically have a favourable impact on the other. This is because income inequality and growth can interact with one another through other underlying factors which may conflict with one another in the end.

One crucial finding is that higher schooling years do not necessarily imply higher educational quality and thus higher growth rate. Together with Temple (1999b) who points out that the impact of education on growth is not the same across countries, Pritchett (2001) puts forward three possibilities that could account for wage gains and a better income distribution as a result of schooling but without such positive impact on aggregate growth. First, the institutional or governance environments could be so distorted that the educational capital accumulated is employed in privately remunerative but socially unproductive or rent-seeking activities such as a bloated bureaucracy or overmanned state enterprises that lower overall economic growth. Second, a continuous expansion of the supply of educated labour when the corresponding demand is stagnant can cause the rate of return to education to fall rapidly, particularly when the sluggish demand for educated labour is due to limited adoption of technologies and innovations. Third, the quality of education might be so poor that years of schooling create only few or no human capital.

Data drawn from the World Development Indicators show that there is substantial variation in schooling quality and that children in some developing countries are lagging far behind. Measured by the primary pupil-teacher ratio, it is shown that the average numbers of pupils per teacher in 2000 – 2004 varies from 9 in high-income countries like Bermuda, Denmark and Hungary to almost 70 in very low-income African countries like Chad, Ethiopia and Mozambique. Nevertheless, workers with higher years of schooling may get paid at the higher wage regardless of their productivity, because employers perceive education as a signal for worker's positive characteristics such as his/her effort and innate ability. Therefore, when schooling is increasingly distributed as represented by a rise in the average years of schooling in the population, income inequality is likely to diminish, even if schooling has no impact on overall productivity.

In addition to the negative relationship between economic growth and education, the unexpected positive relationship between income inequality and health found in this study also seems to be doubtful. However, when taking into account the fact that health services tend to be unequally distributed among the population, the result is likely to be justified. That is, advanced healthcare is expected to raise life expectancy accordingly, but if such superior services benefit only a small group of people who have income high enough, a rise in life expectancy at birth among the high-income group hence can exacerbate the prevailing inequality and vice versa.

The inequality in health is also borne out by empirical data. Data on access to healthcare drawn from the World Development Indicators as measured by the percentage of children ages 12 – 23 months who received vaccinations show that, children in high-income countries tend to be more immune to four diseases – measles and diphtheria, pertussis and tetanus (DPT) – than those in low-income countries. Whereas the child immunisation rate is so poor, no more than 30 per cent, in low-income countries like Chad and Nigeria whose averages GDP per capita in 2000 – 2004 are approximately 800 – 900 U.S. dollars, the immunisation rate is so high, almost reaches 100 per cent in high-income countries like Hungary and Brunei whose GDP per capita are 12,500 and 25,000 U.S. dollars respectively.

Having mentioned that, gross domestic investment as well as foreign direct investment are the two factors that, on the one hand, can stimulate the growth of the economy and, on the other hand, can improve the distribution of income. By raising the level of physical capital accumulation, both higher growth and equitable income distribution can be achieved. Nonetheless, good working conditions, social security and other benefits should be provided in order to guarantee that every individual in the society would be better off.



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CHAPTER VI

THE EXPERIENCE OF THAILAND

The cross-country analysis in the previous chapter presents some notion of regularities across countries. However, for the purpose of policy implication, it is more appropriate to take into consideration a country's specific characteristics in order to deeply investigate the interconnection between income distribution and economic growth. This chapter therefore analyses the experience of Thailand and outlines the potential factors related to the evolution of inequality and growth in the Thai economy.

6.1 Thailand's Growth Phenomenon

It is undisputable that in the past fifty years, Thailand can be regarded as one of the fast growing countries among its developing counterparts. The spectacular growth performance was evidenced by the impressively high annual average rates of growth of real GDP as shown in figure 1. Dated back to the 1960s when Thailand had first launched the national economic development plan, during which the growth rate was approximately 8 per cent per year. In the following two decades, the Thai economy still experienced the unusually high rates of growth of 7 per cent and 7.5 per cent on average. The growth rate reached its peak at 13.3 per cent in 1988 and remained at about 8.5 per cent in the early 1990s. Nevertheless, the miracle era was overshadowed and put to an end by the financial crisis ignited in 1997 which drastically drove the growth rate down to its lowest level of -10.5 per cent in 1998 before steadily recovered to 4.8 per cent by the end of 2000. In 2007, almost a decade after the crisis, the annual growth rate of real GDP is still approximately 5 per cent per year and is unlikely to recover to the level prior to the crisis.

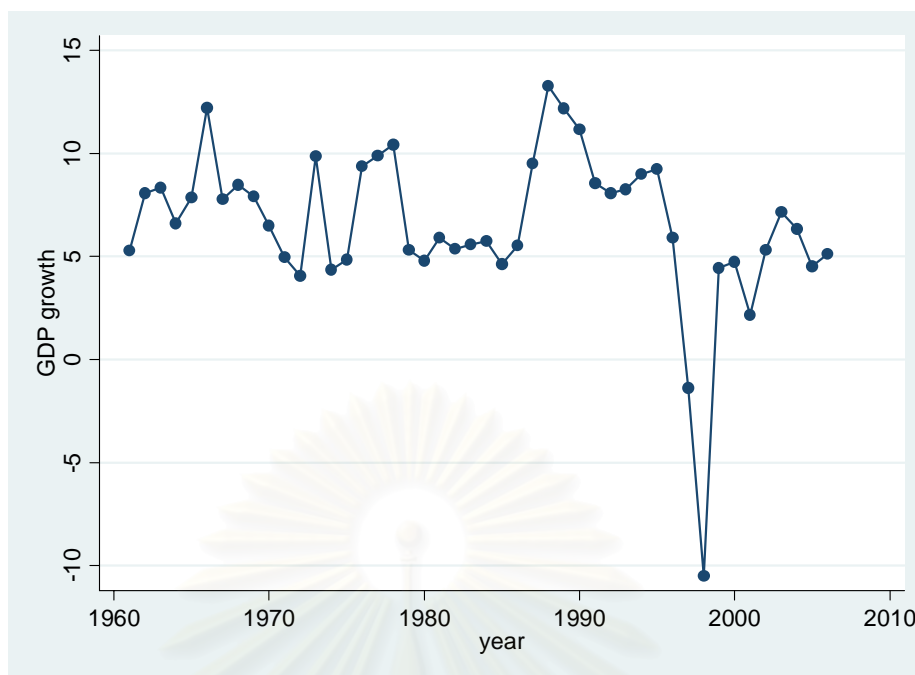


Figure 6.1 Growth rate of real GDP from 1961 - 2007

Source: Office of the National Economic and Social Development Board

Industrialisation is generally believed to be a major force behind Thailand's impressive economic growth experience for decades. The process has shifted the structure of Thai economy away from labour-intensive agriculture to capital-intensive manufacturing. This resulted in the substantially declined share of agriculture, from approximately 30 per cent of GDP in 1960 to 10 per cent of GDP in 2000. The share of manufacturing, on the other hand, increased dramatically, from about 20 per cent in 1960 to more than 40 per cent in 2000 whereas the share of service sectors in GDP remained large and accounted for almost half of GDP during the same periods. According to Sarntisart (2000), the services sectors in Thailand were dominated by the banking, financial institutions, insurance, and real estate (FIRE) sectors.

6.2 Thailand's Income Inequality Patterns

In spite of its extraordinary growth performance, Thailand exhibits unusually high income inequality comparing to other developing countries. To the extent that income is an important factor that represents ability to access and utilise available resources efficiently, such high income disparity thus can reflect the failure of the Thai

development process. The topic of income distribution has received much more attention since the 1960s when the first reliable dataset, namely the Socio-Economic Survey (SES), were made available. A number of studies have been proposed to measure the existing income inequality in Thailand. However, results from these studies are not comparable and could not be used to reflect trends in inequality due to differences in income concepts and units of observation.

Table 6.1 Gini index in 1963 – 1996 from previous studies

	1963	1969	1972	1975/76	1980/81	1985/86	1988	1990	1992	1994	1996
Krongkaew (1979)	0.456	0.482	0.535								
Hutaserani and Jitsuchon (1988)				0.426	0.453	0.500					
Samtisant (2000)							0.493		0.531		0.511

Source: Krongkaew (1977), in Samtisant (2000), and Hutaserani and Jitsuchon (1988)

Krongkaew (1977), in Samtisant (2000), investigates the distribution of income in 1963, 1969 and 1972 and finds that income inequality was severe and continuously deteriorated during the periods. The Gini index, calculated from adjusted income of household that includes income in kind and net corporate retained earnings, rose from 0.456 in 1963 to 0.482 in 1969 and to 0.535 in 1972. The income share of the lowest 20 per cent of households was merely 3 per cent whereas that of the top 20 per cent of households was more than 60 per cent, not to mention that 60 per cent of Thai households were accrued to less than 20 per cent of the total income of the country.

Hutaserani and Jitsuchon (1988) later on examine the distributional trend in 1975/86, 1980/81 and 1985/86. Based on gross income per capita, it is found that income inequality was also increasing, started from 0.426 in 1975/76 to 0.453 in 1980/81 and to 0.500 in 1985/86. Likewise, the lowest 20 per cent of the population scantily earned less than 6 per cent while the top 20 per cent owned over half of the total income.

Using the same methodology as Hutaserani and Jitsuchon (1988), Samtisar (2000) finds that the Gini index declined for the first time in 30 years to 0.493 in 1988. The income share of the lowest 60 per cent of the population rose significantly at the expense of the top 40 per cent. Afterwards, income inequality returned to its previous trend and increased to 0.531 in 1992. Then again, in 1996, the trend reversed and resulted in a reduction in the Gini index to 0.511 and a lower income share of the top 10 per cent of the population.

6.2.1 Regional Income Inequality

In order to examine the trend of income distribution in Thailand thoroughly, it is more appropriate to look into regional income inequality. This is because differences in income inequality across regions are quite large as can be observed in table 6.2 and figure 6.2.

Table 6.2 Regional Gini index from 1986 - 2006

Year	Whole Kingdom	Bangkok	Central	North	Northeast	South
1986	0.4949	0.4022	0.4577	0.4639	0.4959	0.4693
1988	0.4815	0.3888	0.4249	0.4243	0.4119	0.4374
1990	0.5111	0.4216	0.4785	0.4653	0.4300	0.4679
1992	0.5313	0.4575	0.4598	0.4711	0.4583	0.4763
1994	0.5179	0.4055	0.4609	0.4687	0.4696	0.4982
1996	0.5114	0.4027	0.4710	0.4576	0.4637	0.4635
1998	0.5076	0.4156	0.4446	0.4609	0.4517	0.4915
2000	0.5242	0.4187	0.4505	0.4671	0.4753	0.4737
2002	0.5089	0.4391	0.4382	0.4667	0.4616	0.4590
2004	0.4942	0.4231	0.4357	0.4759	0.4407	0.4419
2006	0.5180	0.4525	0.4506	0.4897	0.4968	0.4751

Source: Calculated from the Socio-Economic Survey, National Statistical Office

Bangkok Metropolis, in particular, whose per capita gross regional product (GRP) is the highest, has the lowest inequality in relative to other regions in most of the

periods. The Northeast - the region with lowest per capita GRP – at the same time, has relatively high level of income inequality. It should be noted that despite using the same methodology, the Gini index based on per capita household income in this analysis is slightly different from Samtisant (2000) due to a different treatment of outliers in the database.

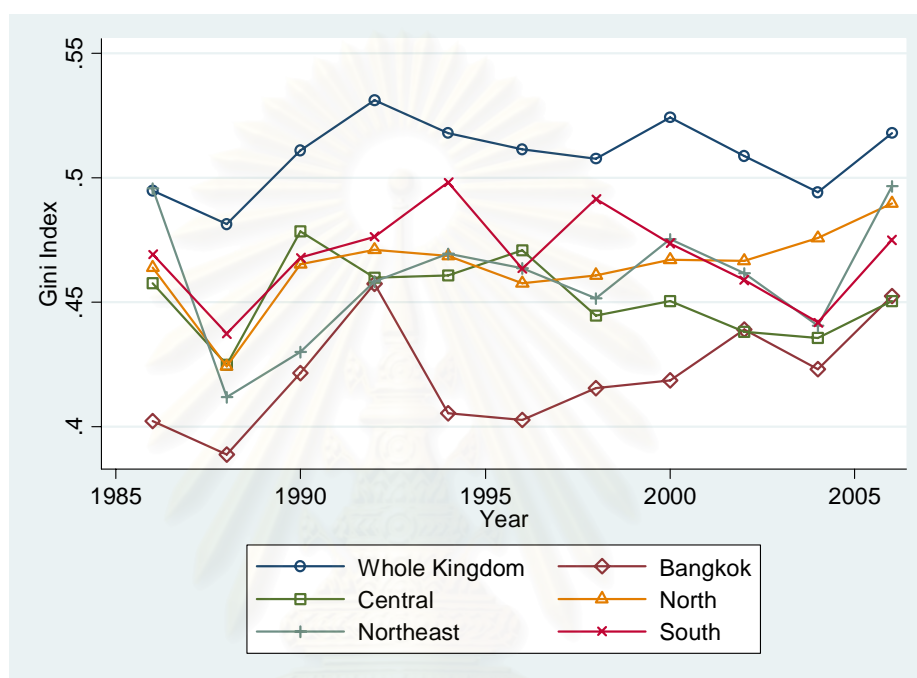


Figure 6.2 Gini index classified by region from 1986 - 2006

Source: Calculated from the Socio-Economic Survey, National Statistical Office

In sum, higher growth over the past fifty years contributed to higher income but its benefits did not spread evenly across the Thai population or trickle down to lower-income groups. There are several potential explanations as to why income inequality in Thailand is so high despite the incredibly high economic performance in the last half century.

6.3 Sources of Income Inequality

In order to succinctly understand the structure of Thai economy and its distribution of income, Thailand's national economic development plans should be mentioned. In Thailand's first development plan (1961 - 1966), the government

facilitated and stimulated investment in the private sector by providing infrastructure and offering privileges and protection to industries whose products were competing with imports. In several plans followed, the government began to focus on agricultural and manufacturing exports and steadily moved from import-substitution to export-promotion regimes by giving special support and direct subsidies to exporters. As for the distributional issue, even if it was directly influenced, it was not the main concern in the development paradigm. It was not until the sixth plan (1987 - 1991) when poverty alleviation and income inequality reduction were emphasised and explicitly targeted. Measures that were expected to raise income of the rural poor and reduce regional income disparity such as the development of agricultural-based and small-scale industries, diversification and structural adjustment in agricultural products and industrial reallocation to regional centres, were focused (Sarntisart, 2004).

Unlike previous development plans, the eighth plan (1997 - 2001) was the first to put forward the role of human capital development as an alternative to the traditional economic growth concept. However, it was not fully achieved due to economic crisis during the period. The ninth plan (2002 – 2006) and the tenth plan (2007 – 2011) have proposed His Majesty the King Bhumibol Adulyadej of Thailand's philosophy of sufficient economy in creating a green and happy society. In the tenth plan, people and their well-being still have been placed at the centre of development in terms of higher average schooling years, higher life expectancy as well as physical and mental strength of the Thai population. In accordance with human capital development, sustainable, efficient and immune economy is focused. Specifically, it is expected that income of the population in the top 20 per cent should not be more than 10 times of those in the lowest 20 per cent. Distributional effects of these measures therefore should be realised accordingly.

6.3.1 Economic Structural Change

The relationship between income distribution and economic growth in Thailand can be partly explained by the industrialisation process. As mentioned earlier, while

agricultural product has played less and less economic role, manufacturing has become increasingly dominant in the Thai economy over the past fifty years. The expansion of manufacturing not only has shifted capital and resources into manufacturing at the expense of agriculture, it also has changed the structure of labour employment accordingly. Table 6.3 below shows that the share of manufacturing labour in the total labour force significantly rose from 4 per cent in 1960 to 10 per cent and 19 per cent in 1980 and 2000, respectively. Despite such exceptional rise in manufacturing product and its employment, the rise in absolute level was not sufficient to shift the structure of employment (Sarntisart, 2000). The majority of labour force therefore remained in agriculture as depicted by the share of agricultural labour which still covered almost half of the total labour force in 2000.

Table 6.3 Economic structure and labour force structure classified by sectors in 1960 – 2000 (% of GDP and % of total labour force)

Year	Agriculture		Manufacturing		Services	
	Share of GDP	Share of labour	Share of GDP	Share of labour	Share of GDP	Share of labour
1960	31.5	82.3	19.7	4.2	48.8	13.5
1970	27.3	79.3	24.0	5.9	48.7	14.9
1980	20.2	70.8	30.1	10.3	49.7	18.9
1990	13.6	64.0	37.8	14.0	48.6	22.0
2000	11.4	48.8	43.1	19.0	45.5	32.2

Source: Tinakorn (2002)

A situation in which most of the labour still remain in agriculture in spite of a steady decline in agricultural output makes output per worker in the agricultural sector lower and so as the correspondingly income. Tinakorn (2002) and others, therefore, claim that the unbalanced relationship between changes in the structure of output and changes in the structure of labour employment has been the cause of such high income inequality found in Thailand.

6.3.2 Fiscal Policies

The role of government in shaping national economic performance and the distribution of income has been increasingly focused in the literature. Fiscal policies in forms of taxation and government expenditure not only affect economic efficiency and the allocation of resources, they also have a significant impact on a country's distribution of income. To provide an overview of the size and the role of central government, fiscal obligations measured by the share of tax revenue collected by central government in GDP and the share of government expenditure in GDP for 2005 are compared across countries.

Table 6.4 Taxation and government expenditure in 2005 (% of GDP)

Country	Tax/GDP	Gov/GDP	Per capita GDP
Pakistan	9.53	14.52	2,108.77
Cambodia	8.02	7.71	2,426.34
Indonesia	12.50	18.50	3,418.97
Philippines	13.02	18.03	4,570.57
Iran	7.91	20.54	7,088.65
Thailand	17.14	16.27	7,719.97
Bulgaria	23.43	34.32	8,035.74
Uruguay	18.51	27.46	8,862.77
Russia	16.63	19.96	9,647.95
Malaysia	17.60	23.70	9,681.23
South Africa	27.50	29.62	9,884.47
South Korea	15.80	21.38	19,598.13
Australia	23.89	24.82	28,285.86
United Kingdom	28.31	41.06	29,570.60
United States	11.20	21.20	37,267.33

Source: World Development Indicators 2007, World Bank

Table 6.4 shows that developed countries tend to have larger size of government than developing ones. The shares of tax revenue and expenditure are relatively higher in high-income countries. In the case of Thailand, the share of tax revenue is 17.14 per

cent of GDP and the share of government expenditure is 16.27 per cent. Comparing to other countries whose GDP per capita at 2000 international prices are approximately the same level, in terms of fiscal policies, Thai government seems to be relatively small.

6.3.2.1 Tax System

In most countries around the world, taxes in various forms are the major sources of total government revenues. However, the structure of revenues seems to vary across countries as illustrated in table 6.5. Whereas central government revenues in developing countries with lower levels of per capita GDP tend to rely on taxes on goods and services which are proportional and are considered as regressive, revenues in developed ones come largely from taxes heavily levied on income, profits and capital gains which are progressive.

Table 6.5 Central government revenues classified by sources of revenue in 2005 (% of total central government revenue)

Country	Taxes on income & profits	Taxes on consumption	Taxes on International trade	Other taxes	Social contributions	Grants & other revenue	Per capita GDP
Pakistan	20.49	34.07	13.58	4.16	0.00	27.70	2,108.77
Cambodia	7.09	36.90	20.67	0.18	0.00	35.15	2,426.34
Indonesia	28.19	32.04	3.02	3.85	2.75	30.15	3,418.97
Philippines	39.64	23.46	17.52	5.89	0.00	13.49	4,570.57
Iran	13.06	2.47	5.93	0.73	10.53	67.28	7,088.65
Thailand	32.99	39.98	7.48	1.25	4.79	13.52	7,719.97
Bulgaria	13.45	42.54	2.20	0.05	26.13	15.63	8,035.74
Uruguay	10.69	49.09	5.08	3.09	20.47	11.58	8,862.77
Russia	5.73	23.62	24.19	0.00	17.72	28.74	9,647.95
Malaysia	47.42	21.43	5.59	-0.23	0.00	25.79	9,681.23
South Africa	49.89	33.34	3.62	3.64	2.08	7.42	9,884.47
South Korea	28.88	28.32	3.35	7.05	16.16	16.25	19,598.13
Australia	65.27	24.15	2.22	0.12	0.00	8.24	28,285.86
United Kingdom	37.37	30.90	0.00	5.53	21.86	4.34	29,570.60
United States	55.26	3.31	1.11	1.09	37.36	1.86	37,267.33

Source: World Development Indicators 2007, World Bank

This is also the case of Thailand of which tax collections contribute about 90 per cent of the total revenues whereas non-tax revenues provide about 10 per cent on average. Thai government tax revenues can be categorised into two groups. The first group is direct taxes, which are collected on income and profits base. These taxes include personal income tax, corporate income tax, petroleum income tax and travelling tax, which has been abandoned since 1992. The second group is indirect taxes, which are collected on consumption of goods and services base. This group of taxation comprises of business tax, value added tax, which was introduced in 1992, specific business tax, excise tax and customs duty.

Table 6.6 Thailand's government revenues classified by sources of revenue (%of total government revenue)

Source of revenue	1996	1997	1998	1999	2000	2001	2002	2003
1. Tax revenues	91.63	89.35	87.27	87.70	89.87	89.52	89.59	89.14
1.1 <i>Direct taxes</i>	33.03	32.60	29.74	28.75	32.68	32.75	32.62	34.23
- Personal income tax	12.63	13.17	17.14	12.89	12.15	12.51	11.96	11.47
- Corporate income tax	19.98	18.84	11.86	14.30	19.07	18.06	18.52	20.56
- Petroleum income tax	0.42	0.59	0.73	1.56	1.46	2.19	2.13	2.20
1.2 <i>Indirect taxes</i>	58.60	56.75	57.53	58.95	57.19	56.76	56.97	54.91
1.2.1 Taxes on consumption	41.92	42.64	46.78	45.69	42.90	42.25	43.30	41.62
- Business tax	0.07	0.05	0.06	0.01	0.02	0.02	0.01	0.01
- Value added tax (VAT)	17.64	17.94	20.19	19.43	18.68	16.34	16.79	14.86
- Specific business tax	3.85	4.00	4.38	2.69	2.02	1.69	1.48	1.26
- Excise tax	20.36	20.66	22.14	23.56	22.19	24.20	25.02	25.50
1.2.2 Custom duties	14.25	11.19	8.49	10.30	11.43	11.79	11.21	10.85
- Import duty	14.24	11.18	8.49	10.29	11.42	11.78	11.19	10.83
- Export duty	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02
1.2.3 Other Taxes	2.43	2.92	2.27	2.96	2.86	2.72	2.46	2.44
2. Non-tax revenues	8.37	10.65	12.73	12.30	10.13	10.48	10.41	10.86
2.1 State Enterprises	5.94	7.58	6.12	6.64	5.89	6.74	6.40	5.39
2.2 Other	2.44	3.07	6.61	5.67	4.25	3.75	4.02	5.48
Total revenue	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Bank of Thailand

Like many other developing countries, the overall tax systems of Thailand can be described as regressive, tax revenues are financed more from indirect taxes levied on goods and services instead of from direct taxes levied on income, profits and capital gains. Thus, the tax burden falls more on lower-income individuals than on higher-income ones. Even though in absolute terms, high-income groups do pay higher taxes, but in relative to their income, they pay less than lower-income groups. With the regressive tax structure, income distribution, as a result, tends to be worsened.

However, when considering the distributional effects of direct taxation and indirect taxation separately, different conclusions are reached. Like Sussangkarn et al. (1988), Sussangkarn et al. (1999) shows that the structure of direct tax collected from personal income is progressive. Using data for 1986, 1990 and 1994, the lower-income groups bore the tax burden - the amount of tax paid as a percentage share of the total income - relatively less than the higher-income groups. Therefore, with such tax system, overall income distribution should be better-off.

Nevertheless, the case of corporate income tax is rather complex since producers can either shift their tax burdens forward to consumers in terms of higher production price or backward to themselves in terms of lower profits and dividend or to their workers in terms of lower wages. Thus, the results tend to vary on the assumption regarding on whom the tax burden falls to. Sussangkarn et al. (1999) finds that in the case where producers could not shift the tax burden forward to consumers, the tax structure is considered as the most progressive. However, if producers can somehow shift forward the tax burden or the market is less competitive, it is found that the more producers put forward the tax burden, the more regressive the tax structure would be.

The distributional effect of indirect taxes, on the other hand, is likely to be disequalising (Krongkaew, 1977; Puttamon, 1990, in Tinakorn (2002); Sussangkarn et al., 1999) particularly when monopoly producers put the entire tax burden on consumers. This is because indirect taxes are imposed on consumption basis and resulted in higher prices of goods and services, lower-income households whose

consumption levels in relative to income levels are higher comparing to higher-income households hence have to bear more of the tax burden. Nevertheless, the tax system becomes mildly regressive if the market is more competitive and producers have to bear some of the tax burden themselves (Sussangkarn et al., 1999). Sussangkarn et al. (1988), in contrast, specify that since the effect of indirect taxes on income distribution is found to be rather weak, it is reasonable to conclude that indirect tax system is fairly neutral.

6.3.2.2 Government Expenditures

Government expenditure is another major tool that can direct the economy into the favourable objectives such as enhancing economic growth, fuelling rural development, targeting the poor and reducing income inequality. Having mentioned that, unlike taxation, the distributional effect of government spending is more difficult to measure. Some kinds of expenditures direct and indirectly benefit some groups of people more than other groups, while other kinds of expenditures are in forms of public goods and services, of which benefits are borne to the society as a whole. In this regard, some assumptions have to be made. Sussangkarn et al. (1999) thus focuses only on impure-public goods, namely expenditures on education, health care and infrastructure, and assumes that the total direct benefits from any government expenditure equal to the total costs of such expenditure. It is found that the direct benefit incidence of all types of expenditures tends to favour high-income groups than low-income groups. Especially in the case of educational expenditure, high-income households are likely to have more opportunities in accessing to higher education than middle-income and low-income households, their direct benefits thus are larger.

6.3.3 Educational Attainment

One of the most important factors that are generally believed to affect income distribution is the human capital accumulation in a form of educational attainment. As previously mentioned, the higher level of education on average tends to help improve

the distribution of income to some extent. Nevertheless, in order to thoroughly understand the relationship between education and income inequality, other relating factors should also be taken into consideration, especially when a country-specific case is investigated and household-based data are available. In this regard, the average educational level is likely to influence the distribution of income as much as the way in which such educational attainment is distributed among the population. Lam and Levison (1992) show that an improvement in the distribution of schooling years should also improve the distribution of labour earnings for the reason that a decline in schooling year variation and a corresponding rise in the average level of schooling dramatically reduce earnings inequality in the case of Brazil.

Sarntisart (1997) is among the first researchers who attempts to investigate the impact of education and income inequality in Thailand in details. In this study, wages and salaries are mainly focused since they are the most likely factors that related to the level of education. By categorising labour earnings inequality by educational background, it is found that higher education leads to lower inequality during 1988 and 1992. Sarntisart argues that this is because better education implies more secure and fair-paid job. Individuals with lower educational capital, on the other hand, tend to engage in less secure jobs, even if there is a possibility to earn higher income, a possibility to get such a job is minimal. Differences in incomes of those who succeeded and those who failed thus worsen income inequality.

Regarding the distribution of educational attainment, the positive relationship between educational inequality and earnings inequality is found. The results of the decomposition of earnings inequality show that equality in education only can reduce the overall inequality in labour earnings, as measured by the Shorrocks index of order 2, by 30 per cent, which is equivalent to a 6 per cent reduction in the Thai income inequality during the periods. Nevertheless, the higher earnings inequality found during 1988 and 1992 in the population group with the same educational background, especially higher educational levels, suggests the significant roles of factors such as

working experience and family background in governing labour earnings in a life cycle that should not be overlooked.



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CHAPTER VII

EMPIRICAL ANALYSIS: THAI EVIDENCE

The experience of Thailand's income distribution in the course of economic growth reviewed in chapter 6 points towards some influential factors that should be closely investigated. This chapter thus proposes a simultaneous-equation system that incorporates those specific features in Thailand, descriptions of data used and the estimated results of the Thai analysis.

7.1 Modelling Framework

Theories and hypotheses described in chapters 2 and 3 indicate that the interconnection between income distribution and economic growth is likely to be country-specific. Therefore, in order to truly reflect the inequality-growth relationship in Thailand, a model of simultaneous equations is modified as follows according to some country's characteristics as reviewed in chapter 6:

$$\begin{aligned}
 TH_GROWTH_{it} = & \alpha_{10} + \beta_{11} TH_GINI_{it} + \beta_{12} \ln(TH_SCHOOL_{it}) \\
 & + \beta_{13} \ln(TH_HEALTH_{it}) + \gamma_{11} TH_AGRI_{it} + \gamma_{12} TH_MANU_{it} \\
 & + \gamma_{13} TH_GOV_{it} + \gamma_{14} TH_TAX_{it} + \gamma_{15} TH_TRADE_{it} + u_{1it} \quad (7.1)
 \end{aligned}$$

$$\begin{aligned}
 TH_GINI_{it} = & \alpha_{20} + \beta_{21} TH_GROWTH_{it} + \beta_{22} \ln(TH_SCHOOL_{it}) \\
 & + \beta_{23} \ln(TH_HEALTH_{it}) + \gamma_{21} \ln(TH_GRP_{it}) + \gamma_{22} (\ln(TH_GRP_{it}))^2 \\
 & + \gamma_{23} TH_EDUGINI_{it} + \gamma_{24} TH_GOV_{it} + \gamma_{25} TH_TAX_{it} + \gamma_{26} TH_TRADE_{it} \\
 & + \gamma_{27} TH_UNEMPLOY_{it} + u_{2it} \quad (7.2)
 \end{aligned}$$

$$\begin{aligned}
 \ln(TH_SCHOOL_{it}) = & \alpha_{30} + \beta_{31} TH_GROWTH_{it} + \beta_{32} TH_GINI_{it} + \gamma_{31} TH_CREDIT_{it} \\
 & + \gamma_{32} TH_DIVERSITY_{it} + u_{3it} \quad (7.3)
 \end{aligned}$$

$$\begin{aligned}
\ln(\text{TH_HEALTH}_{it}) &= \alpha_{40} + \beta_{41} \text{TH_GROWTH}_{it} + \beta_{42} \text{TH_GINI}_{it} \\
&+ \beta_{43} \ln(\text{TH_SCHOOL}_{it}) + \gamma_{41} \text{TH_CREDIT}_{it} \\
&+ \gamma_{42} \text{TH_DIVERSITY}_{it} + u_{4it}
\end{aligned} \tag{7.4}$$

Where i	=	regional index
t	=	time index
α 's	=	constant terms
β 's	=	structural coefficients for endogenous variables
γ 's	=	structural coefficients for exogenous variables
u 's	=	disturbance terms
TH_GROWTH	=	growth rate of real per capita gross regional product (GRP)
TH_GINI	=	regional Gini coefficient for income distribution
$\ln(\text{TH_SCHOOL})$	=	natural log of regional average years of schooling in the population aged 15 and over
$\ln(\text{TH_HEALTH})$	=	natural log of regional life expectancy at birth
TH_AGRI	=	regional agricultural product as a percentage share of real GRP
TH_MANU	=	regional manufacturing product as a percentage share of real GRP
$\ln(\text{TH_GRP})$	=	natural log of real per capita GRP
$(\ln(\text{TH_GRP}))^2$	=	natural log of real per capita GRP squared
TH_EDUGINI	=	regional Gini coefficient for educational distribution
TH_GOV	=	regional per capita government expenditure
TH_TAX	=	regional income tax paid as a percentage share of regional household income
TH_TRADE	=	regional agricultural and manufacturing trade volume as a percentage share of national trade volume
TH_UNEMPLOY	=	regional unemployment as a percentage share of the regional total labour force
TH_CREDIT	=	regional credits granted from commercial banks as a percentage share of regional deposits

TH_DIVERSITY= regional religious fractionalisation

In the same way as the cross-country analysis, the first equation is the standard growth equation that incorporates the Gini index to capture the potential direct connection between them. Other influential variables are also included in the equation. Human capitals in forms of education and health are added to examine whether the levels of human capital in Thailand contribute to its growth rate. Fiscal policies via government expenditure and taxation enter into the equation to depict the role of government in determining a country's economic performance. Besides, in order to signify the level that Thailand is integrated with the rest of the world, the context of globalisation is also considered. However, due to data limitation on other aspects of globalisation, only international trade is employed. The credit provided by the banking sector is finally included to represent the constraint faced by the private sector.

The only difference between the analysis in the Thai context and the cross-country analysis is the exclusion of the investment ratio, mainly due to the unavailability of data. For this reason, the shares of regional agriculture and regional manufacturing in gross regional product (GRP) are used instead to measure the extent to which the production sectors drive the growth of Thai economy.

The second equation involves the distribution of income and its potential determinants. Following the previous analysis, the direct impact of growth on the distribution of income is investigated through the inclusion of the growth variable. Other policy variables that tend to have significant influences on income distribution, namely the accumulations of educational capital and health capital, government fiscal policies and trade policy, are also added as well as the unemployment rate.

Two more important features that are augmented in the inequality equation for the case of Thailand are the log of per capita GRP with its squared and the way in which education is distributed. The level of regional per capita income and its squared are meant to capture the existence of dual economy and the industrialisation process which

are more likely to be a country-specific phenomenon. The process of which a country moves from agricultural-based activities to manufacturing-related ones is long believed to cause major changes in the structure of output, the structure of labour force, their correspondingly income and the distribution within Thailand, therefore, it is focused in the study.

Another crucial factor is inequality in the educational attainment among the population. To the extent that the level of education affects an individual's ability to earn and hence the overall distribution of income, inequality in education should exacerbate such effect on inequality in income distribution. Since data on educational inequality are rarely available on the cross-country basis, this variable is not incorporated in the previous analysis. Fortunately, in the case of Thailand, of quality data on educational background for each individual are available, a more deeply investigation between educational capital and income inequality can be drawn.

Other two equations, the education equation and the health equation, are largely unchanged except that the institutional factor is left out from the analysis due to the problem of data unavailability.

7.2 Data Description

The empirical analysis of the inequality-growth interconnection in Thailand exploits the panel dataset which comprise both cross-sectional and time-series components. This is because, wherever available, they tend to reflect more on the dynamics of the Thai economy. Cross-sectional units are classified into 5 regions which are Bangkok Metropolis, the Central region, the Northern region, the Northeastern region and the Southern region. Time-series units, on the other hand, are categorised into 11 time periods according to the Socio-Economic Survey (SES) which are conducted in every other year from 1986 – 2006 by the National Statistical Office (NSO). Cross-sectional and time-series observations together give in all 55 observations for each of the variables in the model. Data are largely computed from the SES that provides

information on household economic status - their income, expenditure and consumption, household living conditions as well as characteristics including those of their members.

Definitions of variables in the Thai dataset are slightly different from the cross-country one due to data availability. They come from several sources which are drawn on both regional and household basis. Summary statistics of variables included in the model are provided in table 7.1. The growth variable is the rate of growth of real per capita gross regional product (GRP) between every two years during 1986 – 2006. Data on gross regional and provincial product are compiled by the National Economic and Social Development Board (NESDB) and are measured at 1988 constant prices.

The Gini index is computed according to equation (7.5) as proposed by Lerman and Yitzhaki (1994). It is based on gross income per capita as provided in the SES.

$$TH_GINI = \frac{2Cov[y_i, F(y_i)]}{\mu_y} \quad (7.5)$$

Where y_i is the per capita income level, ordered from the lowest to the highest levels, $F(y_i)$ is the cumulative distribution function of y_i , μ_y is the means of per capita income and $Cov[y_i, F(y_i)]$ is the covariance between y_i and $F(y_i)$. For simplicity, it is entered into the model as a percentage term, ranged from 0 to 100, from perfect equality to perfect inequality, respectively.

The educational attainment is represented by the average years of schooling in the population aged 15 and over who considered as economically active. However, data on education in the SES are collected in terms of the highest level of education an individual attained, therefore, they have to be re-defined into schooling years. Another type of human capital, the health status, is not provided in the household survey. Hence, it is measured by the life expectancy at birth as made available in the Public Health Statistics by the Ministry of Public Health.

Table 7.1 Descriptive statistics for the Thai dataset

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
<i>TH_GROWTH</i>	55	8.9029	10.3431	-19.15	39.31
<i>TH_GINI</i>	55	45.3095	2.5736	38.88	49.82
<i>TH_SCHOOL</i>	55	7.3879	1.5276	5.41	11.13
<i>TH_HEALTH</i>	55	70.8686	3.6636	63.51	77.64
<i>TH_AGRI</i>	55	17.8401	12.6446	0.10	37.30
<i>TH_MANU</i>	55	33.2995	16.5277	17.91	72.58
<i>TH_GRP</i>	55	54,730.0900	47,713.7400	9,403.93	159,254.20
<i>TH_EDUGINI</i>	55	27.2715	3.3480	19.52	32.93
<i>TH_GOV</i>	55	1,224.5900	473.1827	194.9696	2,104.34
<i>TH_TAX</i>	55	0.8664	0.4857	0.31	2.29
<i>TH_TRADE</i>	55	12.0769	10.0135	3.40	39.46
<i>TH_UNEMPLOY</i>	55	2.2291	1.4387	0.70	8.70
<i>TH_CREDIT</i>	55	88.4691	24.1296	48.48	150.00
<i>TH_DIVERSITY</i>	55	12.2510	14.3076	1.04	41.87

Other remaining variables are explanatory ones. Starting with the structure of GRP, data on regional agricultural product, regional manufacturing product and the GRP level are come from the NESDB. Agricultural production includes agriculture, hunting, forestry and fishing whereas manufacturing production encompasses mining and quarrying, manufacturing, electricity, gas and water supply and construction. These two variables are computed as percentage shares in real GRP at 1988 constant prices.

The educational inequality index based on schooling years is computed in the same way as the income inequality index. It lies between 0, a perfect educational equality - a situation in which all individuals have the same level of education and 100, a

perfect educational inequality - a situation in which only one individual is educational attained.

Two variables used to reflect the role of Thai government in the inequality-growth relationship are government expenditures and taxation. The variable for government expenditures is measured by per capita government budget allocated to each region. Data on regional expenditure allocation are classified by their functions, namely expenditures for the local administration organisation, water resources improvement, economic infrastructure, educational development and community and social services, all of which are drawn from the Bureau of the Budget.

To take into account the effect of tax burden, the amount of income taxes paid by households as a percentage share of their incomes on average is employed. Data on tax expenditure and household income are again drawn from the SES dataset. Since personal income tax is largely levied directly on wage and salary, the tax burden borne by households is calculated based on income from wages and salaries.

What seems to be problematic is the data on international trade which cannot be disaggregated on the regional basis due to the fact that Thailand is regarded as a Kingdom, its interactions with the rest of the world hence are taken as a whole. For this reason, another proxy is needed. To the extent that traded goods produced in Thailand are mostly agricultural and manufacturing ones, the share of regional agricultural and regional manufacturing product in the country's total trade volume thus are used to roughly imply the regional trade volume in Thailand.

Data on the unemployment rate are drawn from the NSO's Social Indicators, which in turn compiled from the Labour Force Survey in Round 3. They represent those economically inactive individuals as a percentage share of the total labour force. The degree to which the financial market develops is measured by the ratio of credits provided by commercial banks to their deposits. Financial data for each region are

compiled by the regional offices of the Bank of Thailand and are available in the Economic and Financial Report.

Finally, the degree of cultural diversity in each region is measured by religious fractionalisation and is calculated by using the equation as suggested by Alesina et al. (2003):

$$TH_DIVERSITY = 1 - \sum_{i=1}^n s_i^2 \quad (7.6)$$

Where s_i is the share of buddist, muslim, or other religion in the regional total population. Religious information is provided in the Population and Housing Census in 1990 and 2000. This variable reveals the probability that two randomly selected individuals from a population belonged to different religious groups. It enters into the model in a form of percentage.

7.3 Empirical Results

Equation (7.1) – (7.4) are estimated by applying the three-stage least squares (3SLS) method to the panel dataset of Thailand. The estimated results are presented in table 7.2, most of which are consistent at least in sign with the results found in the cross-country analysis presented in chapter 5. Column 1 shows the results for the growth equation which point out the role of two influential factors in determining the growth rate. Of the most interest is the negative estimated coefficient on the Gini index which equals -3.78. A one percentage point increase in the inequality index deteriorates the growth of per capita GRP by 3.78 percentage points. That is, a relatively high level of inequality in income distribution tends to result in a relatively low per capita GRP growth. This is because a region in which income inequality is high tends to face the misallocation of resources and underinvestment of productive activities, both of which are obstructive to economic growth.

Table 7.2 Three-stage least squares estimates from the Thai dataset

Explanatory Variable	Dependent Variable			
	(1) <i>TH_GROWTH</i>	(2) <i>TH_GINI</i>	(3) $\ln(\text{TH_SCHOOL})$	(4) $\ln(\text{TH_HEALTH})$
<i>Constant</i>	124.9116 (0.72)	-54.7039 (-0.80)	5.7087** (9.14)	2.9727** (16.04)
<i>TH_GROWTH</i>		-0.1278 (-1.39)	-0.0153** (-4.48)	0.0018** (2.45)
<i>TH_GINI</i>	-3.7840** (-3.42)		-0.0793** (-6.17)	0.0133** (4.41)
$\ln(\text{TH_SCHOOL})$	-40.5664** (-2.56)	-6.4991 (-0.89)		0.3325** (10.71)
$\ln(\text{TH_HEALTH})$	30.5852 (0.63)	13.7338 (0.85)		
<i>TH_AGRI</i>	0.1669 (0.65)			
<i>TH_MANU</i>	0.1149 (0.51)			
$\ln(\text{TH_GRP})$		10.9937 (0.57)		
$(\ln(\text{TH_GRP}))^2$		-0.5640 (-0.63)		
<i>TH_EDUGINI</i>		0.0955 (0.83)		
<i>TH_GOV</i>	0.0003 (0.11)	0.0005 (0.88)		
<i>TH_TAX</i>	-2.4123 (-0.47)	-0.9900 (-1.27)		
<i>TH_TRADE</i>	0.0386 (0.12)	0.0144 (0.35)		
<i>TH_UNEMPLOY</i>		0.0789 (0.26)		
<i>TH_CREDIT</i>			-0.0003 (-0.29)	0.0002 (0.83)
<i>TH_DIVERSITY</i>			0.0021 (1.23)	-0.0004 (-1.10)
<i>N</i>	55	55	55	55

Note: Z-statistics in parentheses; ** significant at 5 per cent level; * significant at 10 per cent level

Consistent with the analysis of cross-country dataset, the estimate for educational capital is found to be significantly negative. An estimated coefficient of -40.57 implies that an additional year in schooling somehow lowers the per capita GRP growth by 5.49 percentage points. As discussed previously, this may be because the quality of schooling in Thailand differs markedly across regions. In some regions, the schooling quality may be so poor that any increase in the years of schooling on average does not attribute to productivity and higher growth.

Other variables seem to have merely low explanatory power in explaining the growth of per capita GRP in Thailand. However, some important inferences can still be drawn from the estimated results. The positive estimate on the life expectancy at birth implies that human capital in a form of health is likely to be another factor that can help stimulate economic growth. As for the role of economic sector, the positive estimates on the share of regional agricultural product in GRP and that on the share of regional manufacturing product found in column 1 represent the important roles of agriculture and manufacturing in contributing to the spectacular growth performance in Thailand.

As for the fiscal policy variables - government expenditures and taxation – the estimates seem to conflict with one another in determining the regional growth of GRP per capita. While higher regional government expenditures per capita is likely to be good for growth, higher tax burden is likely to be harmful to growth. However, the relatively small impact of government expenditures on growth observed may be due to that fact that budget expenditures regionally distributed are heavily spent on infrastructure and public amenities developments rather than improving the quality of social welfare and services. The benefits of such expenditure allocation thus should take longer time to be realised. On the other hand, higher tax incidence directly collected from households in relative to the income level tends to worsen their incentives to invest. This burden may drive away productive activities or result in lower level of effort putting in by such private economic agents that thereby lower the rate of growth.

The positive estimate on the trade variable means that, through specialisation, economies of scale or technological development, opening up to international trade can help boost economic growth in Thailand.

The estimated results shown in column 2 are for the inequality equation. The estimate on per capita GRP growth strengthens the negative relationship between income distribution and economic growth earlier found in the cross-country study. However, in the case of Thailand, inequality is more likely to impact growth than another way around that suggests growth to impact inequality.

One main policy variable - education - can also affect income distribution in Thailand. An increase in the average years of schooling is likely to lower the inequality index. Together with the negative relationship between educational attainment and growth found in column 1, it can be concluded that this is also the case where an increase in the educational attainment level on average helps improve the distribution of income but not the overall growth.

In addition to educational capital, another factor that should be focused is its distribution within the population. It is shown that a deterioration in educational inequality also manifests itself in a more severe income inequality. For the reason that individuals with lower educational background are normally excluded from skilled-intensive sectors which pay relatively high, but always ended up by engaging in labour-intensive ones which are poorly paid, inequality in education thus usually reflects in inequality in income.

The result for health capital is also in line with the previous study in that it is found to positively interact with income inequality. For the reason that better healthcare is usually concentrated in the upper-income class, higher life expectancy at birth measured in years thus associates with widening income disparity.

Two variables included in the inequality equation to capture the distributional effect of economic structural change in Thailand - the log of per capita GRP and its squared - do reflect essential implications. What are of interest are the signs of coefficients on both variables. The positive and the negative signs found on per capita GRP and its squared, respectively, suggest that, inequality tends to increase in the initial stages of development until the income level of 17,100 Baht is reached. Afterwards inequality begins to decrease as income per capita continues to rise. These findings lend support to the Kuznets inverted-U hypothesis that puts forward the influence of industrialisation process and its consequence on labour movement in the pattern of inequality.

Despite the favourable effect on economic growth, government expenditures are found to have disequalising effect on income distribution. As table 7.3 shows, the way in which per capita expenditures are allocated does not truly relate to the level of per capita income. Instead of assigning higher government budget expenditures to lower-income regions to help narrow down income disparities, Thai government gives out smaller budgets to the low-income regions - the Northeast and the South – comparing to those to other regions. In the South, in particular, when the economic performance dominated by the great performance of two higher-income provinces of the regions, Songkhla and Phuket, has concealed the poor economic conditions of the three provinces in the same region, Narathiwat, Pattani and Yala, the inequality situation tends to exacerbate with such poor expenditure allocation (Sarntisart, 2005).

As for taxation, the data show that households in the high-income regions do pay more income taxes in relative to their earnings and bear more tax burden than those in the low-income regions, such progressive structure of direct taxation in Thailand, therefore, results in lowering income inequality.

Table 7.3 Averages of per capita GRP, per capita government expenditures and tax burden from 1986 – 2006, classified by region

Region	<i>Per capita GRP</i> ¹⁾	<i>Per capita government expenditures</i> ²⁾	<i>Tax burden</i> ³⁾ (%)
Bangkok	133,111.20	997.10	1.6982
Central	73,241.92	1,345.18	0.8573
North	22,221.09	1,400.62	0.6847
Northeast	14,254.17	1,118.25	0.5489
South	30,822.01	1,261.80	0.5429

Sources: 1) Office of the National Economic and Social Development Board

2) Calculated from the Budget Plan in Fiscal Year, Bureau of the Budget

3) Calculated from the Socio-Economic Survey, National Statistical Office

However, integration with the world economy through international trade tends to widen regional income disparity. Even if Thailand has been increasingly engaged in the globalisation process as observed by a continuously rise in the export value, such larger amount of exports does not contribute much to the country's overall value-added (Sarntisart, 2008). This is because Thai exports are mainly the products of assembling processes which do not incur any significant value-added. Furthermore, these industries, automobile and electronic circuit, for examples, are often protected and granted special privileges, therefore, benefits from trade are likely to fall onto a small group of people. Thus, an increase in international trade tends to worsen the distribution of income accordingly. Lastly, the higher rate of unemployment is resulted in higher income inequality as expected.

The results for the education and health equations as shown in columns 3 and 4 point out some interested findings. They show that income inequality and economic growth are not only directly related, they are indeed indirectly interact with one another through underlying factors. However, like those findings earlier found in the analysis of

188 countries, the estimated results in the case of Thailand also depict a contradiction to the conventional view on the issue.

Consider first the causality running from growth to income distribution in the case of educational capital. The estimated coefficient of -0.02 on the growth rate means that a one percentage point increase in the per capita GRP growth lowers years of schooling in the adult population by only 0.11 years on average which in turn widens regional income inequality.

In the case of health capital, the estimated coefficient on growth which equals 0.002 implies that a one percentage point increase in the growth rate raises the life expectancy by 0.13 years on average. Given the positive relationship between life expectancy and income inequality as found in column 2, the effect of an increase in the growth rate thus indirectly transfers onto higher income inequality through a better health condition.

Moving on to the causality running from income distribution to economic growth, the estimate of -0.08 on the Gini index represents a negative relationship between inequality and education. A one percentage point decrease in the Gini index helps raise the years of schooling on average by 0.59 years. Despite an improvement in the educational attainment, through this factor however, the effect of lower income inequality strangely results in the lower growth rate.

On the contrary, in the case of health, a decrease in the Gini index by one percentage point shortens a newborn child's expected years to live by 0.94 on average and thereby lowers the rate of growth of GRP per capita.

As for the financial market development, measured by the ratio of credits provided by commercial banks in relative to deposits, the estimated results show scantily small impacts on both types of human capital. Lessening financial constraints faced by low-income individuals are less likely to influence the accumulations of such

valuable assets. These results are contrast to those in the cross-country analysis, where credit plays an important part in physical capital investment and educational investment.

The role of cultural diversity, as measured by religious fractionalisation, in determining the accumulation of human capitals is also crucial. Whereas higher cultural diversity is likely to lower life expectancy, it oddly raises the years of schooling of the population. This may be due to the fact that, in Thailand, some privileges such as quotas in higher educational level enrolment or scholarships are specifically granted to individuals who belonged to the minority groups, differences in religious background are therefore augment the schooling years.

7.4 Main Findings

In sum, taking into account some particular features and characteristics of the Thai economy, the estimated results from the Thai dataset in 1986 – 2006 are largely consistent with the results found previously from the cross-country dataset in 2000 – 2004. The interconnection between income inequality and economic growth in Thailand is found to be negative. Higher per capita GRP growth can partly account for lower income inequality in the country in the same way as lower inequality that can explain higher growth. Having mentioned that, there are still several underlying factors that interact with these two factors and act as channels through which they can indirectly correlate. Through these factors, however, the possibility of trade-off between income equality and economic growth might occur.

In the case of education, whereas the higher level of educational attainment on average enables individuals to earn more and thus narrow down income disparity among the population, lower income inequality, at the same time, also expands the schooling years on average as expected. Such higher educational capital accumulated, however, tends to associate with the lower growth of GRP per capita. It is possible that differences in the quality of schooling across regions may be so large that some region

in which the educational quality is so poor, average schooling years does not raise cognitive skills or productivity.

A possible trade-off between an equitable income distribution and a high growth performance also arises in the case of health condition. Whilst higher life expectancy at birth significantly stimulates growth in the same way as higher growth that tends to raise the life expectancy, a better health condition, implied by higher years a new born child may expected to live, tends to relate with widening income inequality. Access to health services in Thailand as measured by the percentage of physician in total population differs significantly across regions. In Bangkok metropolis, the highest-income region of Thailand of which per capita GRP is approximately 130,000 Baht, the percentage of physician to population is 0.0975. Surprisingly, it is merely 0.0107 in the poorest region of Thailand, the Northeast, of which per capita GRP is 14,000 Baht. So far as this evidence is concerned, it is reasonable to claim that the distribution of health and the distribution of income are positively correlated.

In addition, income distribution and economic growth are jointly determined by both government policies. Raising per capita expenditure regionally allocated may fuel the regional income growth, but at the cost of higher income inequality. Likewise, increasing tax burden through direct income taxation may reduce inequality in the distribution of income across regions, but may also end up with the lower growth.

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CHAPTER VIII

CONCLUSIONS AND SUGGESTIONS

The relationship between income distribution and economic growth has been one of the most active issues in development economics. While some studies interest in the effect of economic growth on income distribution, others focus on the effect of income distribution on economic growth. For the most parts, however, these two strands of literature have been investigated independently of one other. By analysing the inequality-growth relationship only in one dimension without taking into consideration another plausible dimension, therefore, can be misleading especially in the policy implication point of view.

This study extends those previous studies by examining the causality from economic growth to income distribution and the causality from income distribution to economic growth simultaneously on both international and national basis. Not only their direct impacts on one another, this study also focuses on the potential channels through which income distribution and growth might indirectly interact. Economic, social as well as political factors believed to influence the inequality-growth relationship are thoroughly examined so that effective development policies can be achieved.

Providing that the incidence of inequality and economic performance are the matters of global concern, the analysis based on cross-country data is firstly performed to portray the overview of the issue on an international ground. In the second part, some specific features and characteristics of Thailand are put forward in the analysis of the interconnection between inequality and growth based on panel dataset across regions over time.

8.1 Conclusions of the Study

The estimated results from both the cross-country and the Thai analyses are largely consistent with one another. Their main findings are summarised as follows.

Income inequality and economic growth are indeed directly affected each other. The negative relationship found between them implies that higher growth can contribute to lower income inequality in the same time that lower inequality can contribute to higher growth. Importantly, these two main factors are also found to be able to indirectly interact with one another through other underlying factors. These factors are education, health, domestic and foreign investment, international trade, credit market, fiscal policies, political institutional environment and cultural diversity.

Physical capital investment, either domestically produced or flown from abroad, tends to have favourable effects both on income distribution and economic growth across countries. However, the possibilities of trade-off between a more equitable income distribution and a good economic performance seem to appear through both types of human capital. It is found that whilst an increase in educational capital, measured as average years of schooling in the adult population aged 15 and over, is related to an improvement in the distribution of income, it tends to associate with lower the rate of growth. Any improvement in the distribution of income would raise the average years of schooling which thereby are likely to lower economic growth.

Looking closely into educational capital in Thailand, it is found that the way in which schooling is distributed among the labour force should also be focused. This is because not only an increase in the educational attainment, but also an improvement in the educational distribution that are shown to help narrow down inequality in the distribution of income.

In contrast to the educational capital, a rise in health capital, measured by higher years of life expectancy at birth, is positively related to higher economic growth, but at the same time, it tends to link with the deterioration in the inequality situation. The results together show that, while faster growth would expand the life expectancy of a new born child, it thereby widens the existing income inequality in a society.

Besides the key channels that explicitly link income distribution and economic growth, the results of this study show that, other factors can also play important roles in the inequality-growth relationship in that they in turn determine the extent to which those channels are developed.

The first determinant that significantly affects the accumulation of capital is the stage of financial development. Poorly developed credit market with limited access to loans holds back individuals from performing productive investments that benefit the overall economy. In addition to the economic factors, this study also indicates the importance of a political factor. Political institutions of high quality, captured by higher political rights and civil liberties, tend to attract more investment from domestic and abroad. Likewise, a social factor – cultural diversity, measured by linguistic and religious fractionalisation, is another essential factor that should not be overlooked since it plays a crucial role in determining the extent to which capital is accumulated.

As far as the globalisation process is concerned, this study finds that in the cross-country analysis, the benefits from international trade are unevenly spread across countries. Lower-income countries tend to advantage more in terms of higher growth from trade openness than higher-income ones, but they tend to worsen in terms of distribution in that lower-income countries are likely to process higher degrees of income inequality. The results from the Thai analysis also indicates similar findings. Whilst international trade tends to associate with higher growth, it tends to widen the income gap across regions.

When continue to investigate the globalisation context, it is found that differences in the structure of merchandise exports do matter. The so-called Dutch disease is existed: countries whose exports rely heavily on natural resources tend to have lower growth rates.

In the case of Thailand, two fiscal policies, namely government expenditure and taxation, seem to conflict one another in jointly governing income distribution and

economic growth. Even if regional budget allocation per capita seems to boost economic growth to some extent, it fails to redistribute and help the low-income individuals to become better-off. On the other hand, while higher income tax burden helps improve the distribution of income, it tends to lower the rate of growth.

8.2 Policy Implications

Important policy implications and recommendations can be drawn from both the cross-country and the Thai analyses. First, regarding the direct effects, despite the negative relationship between income inequality and economic growth empirically found, by shifting one factor would not automatically have a favourable effect on another factor. This is because these two main factors can indirectly affect one another through other underlying factors.

Second, higher schooling years does not necessarily imply higher educational quality that in turn helps stimulate the overall productivity. However, this finding does not suggest a government to invest less in basic schooling. To lower the educational level because of a small negative growth impact would be counter-intuitive. Above all, education has a large number of direct beneficial effects other than raising economic output, for examples, as this study finds, it helps reduce income disparity and also increase a new born child's life expectancy. What a government should perform instead is to improve the quality of schooling so that additional years of schooling would enhance individuals' abilities and cognitive skills that truly augment to the prevailing human capital level.

And as far as the educational distribution in Thailand is concerned, the quality of schooling should be improved in a way that schools and universities in the same educational levels should have the same standards. Schooling of different levels should distinguish themselves according to their specialisation rather than trying to heighten their educational degree provided.

Third, superior health services are unlikely to be equally distributed but rather concentrated in that they usually benefit only a small group of people with high income levels, especially in a country where health services are being liberalised. A government, therefore, should increase the public access to high-quality health facilities either in forms of universal coverage services or health insurance so that individuals with low income levels can also exploit the benefit from such advanced healthcare.

Fourth, since credits provided by commercial banks in Thailand are unlikely to have impact on any accumulations of human capitals both in education and health, the Thai government should promote specific loans such as student loans fund with relatively low interest rates to encourage investment in educational capital.

Fifth, by and large, the globalisation process should not be taken as a universal recommendation for all countries since its favourable effects differ from country to country depending on some specific features and backgrounds. In this regard, to reap the gains from integration with the global economy, education should be provided either in forms of on-the-job training or educational retaining programmes to raise labour cognitive skills and their productivity. Likewise, to help the most vulnerable affected groups, practices of international labour standards, job security regulation and social-safety net should be enforced. In the case of Thailand, in particular, export promotion should be aimed at agriculture-based exports whose effects on income distribution is more favourable than those of manufacturing ones.

Sixth, in order to produce the favourable distributional effect of government spending, the lower-income groups should be more targeted. Particularly in the three Southern provinces of Thailand whose poor economic conditions have been outshined by other two higher-income provinces in the same region. Moreover, such expenditures should aim at creating productive investments which not only enhance individuals' physical and human capitals, but are also good to the long-term growth.

Seventh, even if the progressive income taxation in Thailand helps narrow down the prevailing income disparity, when considering the overall tax structure as a whole, of which the largest part of tax revenues are from indirect taxes, Thailand's tax system can be considered as slightly regressive. Therefore, in order to alleviate the high degree of income inequality, the Thai government should rely more on direct taxation either in forms of personal income tax or corporate income tax as the main sources of revenues rather than indirect taxation such as consumption taxes as it has been.

Finally, without taking diversities, either in ethnic, mother tongues or religions into account, a government's effort to alleviate the inequality problems and enhance economic growth may not be fulfilled. Development policies therefore should be formulated in the way that explicitly respect and promote cultural differences.

In sum, income distribution and economic growth are not the only two factors that should be focused on. The role of other factors such as human capital should also be taken into consideration in aiming to improve the overall distribution as well as economic performance. Rather than the distribution of income, what seems to be more important is the distribution of available opportunities. That is, in order to promote an economy where income distribution is equally distributed and economic growth is enduring, policy makers should provide all individuals with similar chances in lives to attain higher education, acquire better health care, access to credit market, and to become politically and socially active, regardless of their predetermined backgrounds.

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สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย



APPENDICES

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

APPENDIX A: List of Countries

1	Afghanistan	34	Chad	67	Grenada
2	Albania	35	Chile	68	Guatemala
3	Algeria	36	China	69	Guinea
4	Angola	37	Colombia	70	Guinea-Bissau
5	Antigua	38	Comoros	71	Guyana
6	Argentina	39	Congo, Dem. Rep.	72	Haiti
7	Armenia	40	Congo, Republic of	73	Honduras
8	Australia	41	Costa Rica	74	Hong Kong
9	Austria	42	Cote d'Ivoire	75	Hungary
10	Azerbaijan	43	Croatia	76	Iceland
11	Bahamas	44	Cuba	77	India
12	Bahrain	45	Cyprus	78	Indonesia
13	Bangladesh	46	Czech Republic	79	Iran
14	Barbados	47	Denmark	80	Iraq
15	Belarus	48	Djibouti	81	Ireland
16	Belgium	49	Dominica	82	Israel
17	Belize	50	Dominican Republic	83	Italy
18	Benin	51	Ecuador	84	Jamaica
19	Bermuda	52	Egypt	85	Japan
20	Bhutan	53	El Salvador	86	Jordan
21	Bolivia	54	Equatorial Guinea	87	Kazakhstan
22	Bosnia and Herzegovina	55	Eritrea	88	Kenya
23	Botswana	56	Estonia	89	Kiribati
24	Brazil	57	Ethiopia	90	Korea, Dem. Rep.
25	Brunei	58	Fiji	91	Korea, Republic of
26	Bulgaria	59	Finland	92	Kuwait
27	Burkina Faso	60	France	93	Kyrgyzstan
28	Burundi	61	Gabon	94	Laos
29	Cambodia	62	Gambia, The	95	Latvia
30	Cameroon	63	Georgia	96	Lebanon
31	Canada	64	Germany	97	Lesotho
32	Cape Verde	65	Ghana	98	Liberia
33	Central African Republic	66	Greece	99	Libya

APPENDIX A: List of Countries (continued)

100	Lithuania	133	Peru	166	Taiwan
101	Luxembourg	134	Philippines	167	Tajikistan
102	Macao	135	Poland	168	Tanzania
103	Macedonia	136	Portugal	169	Thailand
104	Madagascar	137	Puerto Rico	170	Togo
105	Malawi	138	Qatar	171	Tonga
106	Malaysia	139	Romania	172	Trinidad & Tobago
107	Maldives	140	Russia	173	Tunisia
108	Mali	141	Rwanda	174	Turkey
109	Malta	142	Samoa	175	Turkmenistan
110	Mauritania	143	Sao Tome and Principe	176	Uganda
111	Mauritius	144	Saudi Arabia	177	Ukraine
112	Mexico	145	Senegal	178	United Arab Emirates
113	Micronesia, Fed. Sts.	146	Serbia and Montenegro	179	United Kingdom
114	Moldova	147	Seychelles	180	United States
115	Mongolia	148	Sierra Leone	181	Uruguay
116	Morocco	149	Singapore	182	Uzbekistan
117	Mozambique	150	Slovak Republic	183	Vanuatu
118	Namibia	151	Slovenia	184	Venezuela
119	Nepal	152	Solomon Islands	185	Vietnam
120	Netherlands	153	Somalia	186	Yemen
121	Netherlands Antilles	154	South Africa	187	Zambia
122	New Zealand	155	Spain	188	Zimbabwe
123	Nicaragua	156	Sri Lanka		
124	Niger	157	St. Kitts & Nevis		
125	Nigeria	158	St. Lucia		
126	Norway	159	St. Vincent & Grenadines		
127	Oman	160	Sudan		
128	Pakistan	161	Suriname		
129	Palau	162	Swaziland		
130	Panama	163	Sweden		
131	Papua New Guinea	164	Switzerland		
132	Paraguay	165	Syria		

APPENDIX B: List of Provinces by Region

Bangkok Metropolis	North	Northeast	South
1 Bangkok Metropolis	27 Chiangmai	44 Nakhonratchasima	63 Nakhon si thammarat
Central	28 Lamphun	45 Buriram	64 Krabi
2 Samutprakan	29 Lampang	46 Surin	65 Phangnga
3 Nonthaburi	30 Uttaradit	47 Sisaket	66 Phuket
4 Pathumthani	31 Phrae	48 Ubonratchathani	67 Suratthani
5 Phranakhon si ayutthaya	32 Nan	49 Yasothon	68 Ranong
6 Anghong	33 Phayao	50 Chaiyaphum	69 Chumphon
7 Lopburi	34 Chiangrai	51 Amnatcharoen	70 Songkhla
8 Singburi	35 Maehongson	52 Nongbualamphu	71 Satun
9 Chainat	36 Nakhonsawan	53 Khonkaen	72 Trang
10 Saraburi	37 Uthaihani	54 Udonthani	73 Phatthalung
11 Chonburi	38 Kamphangphet	55 Loei	74 Pattani
12 Rayong	39 Tak	56 Nongkhai	75 Yala
13 Chanthaburi	40 Sukhothai	57 Mahasarakham	76 Naratiwat
14 Trat	41 Phitsanulok	58 Roiet	
15 Chachoengsao	42 Phichit	59 Kalasin	
16 Prachinburi	43 Phetchabun	60 Sakonnakhon	
17 Nakhonnayok		61 Nakhonphanom	
18 Sakaeo		62 Mukdahan	
19 Ratchaburi			
20 Kanchanaburi			
21 Suphanburi			
22 Nakhonpathom			
23 Samutsakhon			
24 Samutsongkhram			
25 Phetchaburi			
26 Prachuapkhirikhan			

APPENDIX C: Approximates of Schooling Years

Level of Education	Schooling Years
No formal education	0
Kindergarten	1
Elementary grade 1	2
Elementary grade 2	3
Elementary grade 3	4
Elementary grade 4	5
Elementary grade 5	6
Elementary grade 6	7
Elementary grade 7	8
Elementary not specified grade	-
Secondary grade 1 (Revised scheme)	8
Secondary grade 1	8
Secondary grade 2	9
Secondary grade 3	10
Secondary grade 4	11
Secondary grade 5	12
Secondary grade 6	13
Secondary not specified grade	-
University year 1	14
University year 2	15
University year 3	16
University year 4	17
University year 5	18
University year 6	19
Bachelor degree	17
Master of Arts/Science	19
Ph.D.	24
University not specified level	15
Lower vocational	13
Upper vocational	15
High vocational	15
Teacher training	13
Technical and advanced vocational	14
other education	-
Unknown or not reported	0

BIOGRAPHY

Miss Sawarai Boonyamanond, the youngest child of Mr. Somchai and Mrs. Porntip Boonyamanond, was born on May 31, 1980 in Bangkok, Thailand. She attended Saint Joseph Convent School during her earlier years of schooling and Triam Udom Suksa School for her high-school years. She received her Bachelor of Economics from the Faculty of Economics, Chulalongkorn University, Thailand in April 2000. In September 2002, she received her Master of Science in Economics from the Department of Economics, University of Bristol, England. She joined the Doctor of Philosophy Program in Economics, Chulalongkorn University in June 2003.



สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย