

# CHAPTER 1

## INTRODUCTION



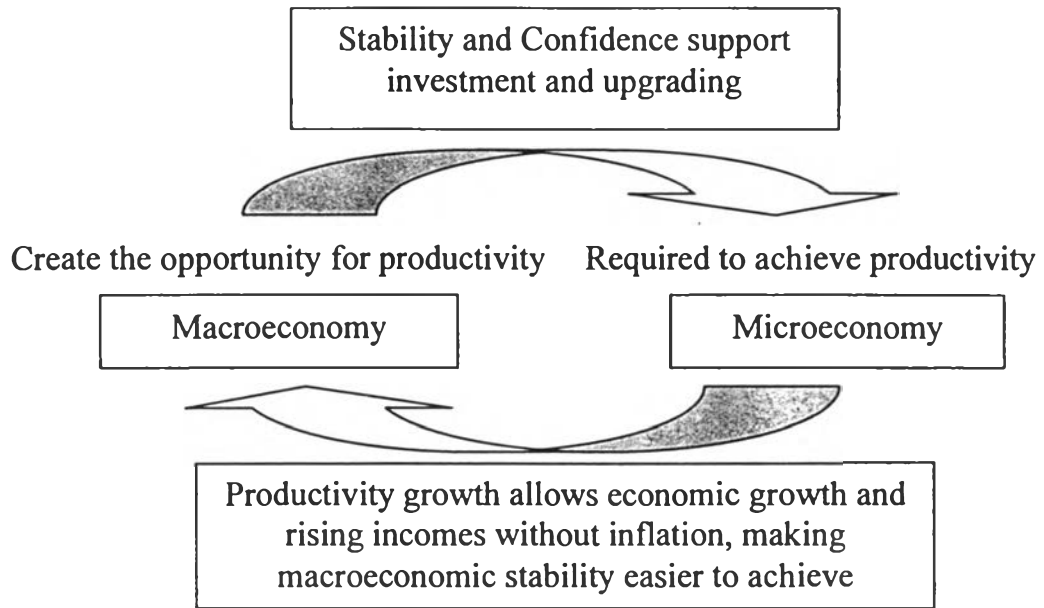
### 1.1 Introduction and Statement of Problem

People are both the drivers and passengers of the economy. They manage, work, handle and deal in the production process and consume goods and services at the same time. Human beings are not only the factor of production but also the heart of production. Capital and natural resources are passive factors of production; whereas human beings are the active agents who accumulate capital, exploit natural resources, establish social, economic and political organizations and carry forward national development.

The human, classified by commonly different interests, embodies in the both the public and private sectors and plays the diverse but interrelated roles to engender a productive economy. Since the principal achievements of government or public administration, responsible for macroeconomy, are to develop the economy, sustain peace, drive the economy; the private sector, responsible for microeconomy requires to survive and sustains itself in the race of business. Therefore, the effective productivity is required to accomplish those objectives. The development of macro and micro, to say public and private sector, should move simultaneously as Figure 1. Macroeconomy creates stability and confidence support investment and upgrading; thus, it supposes to create the opportunity for productivity. The microsector requires achieving productivity which allows economic growth and raises income without inflation.

Hence, labor productivity, considered by the government agent as an essential factor to drive economy, is one of the crucial index to measure the performance to produce of human being, and point out the effectiveness of the people.

**Figure 1** The relationship of productivity between public and private sector



**Source:** Porter (2003:14)

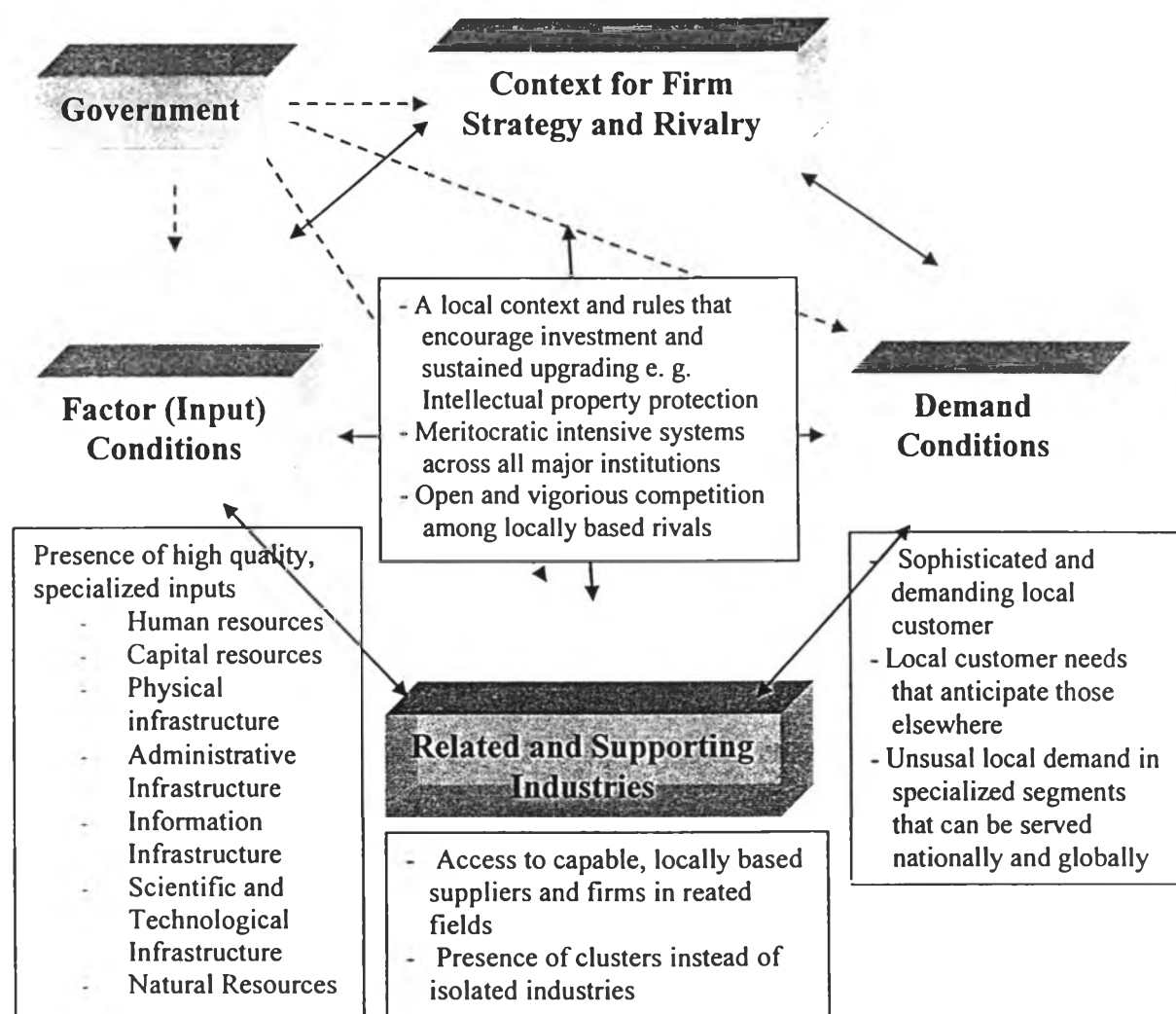
Consequently, labor productivity should be spotlighted owing to an arising challenge from stronger competition in international market and the necessity to organize the long-run growth. How to maximize utilization of resources is the key point for the future efforts to score victory in the contest.

Nevertheless, labor productivity is regarded as an indispensable impulsion and the problem of low labor productivity is realized as a long-term problem of Thailand. The existence of this problem remains on the economy and was mostly mentioned after the economic crisis; the so called “Tom Yam Kung Crisis”, in 1997, as one of the main causes. In spite of the fact that since the 1970s, Thailand’s performance of production was remarkable as the rapid expansion at an average rate of 7.8 per cent per annum as well as 6.8 per cent in average of the real growth rate during 1990-1995, and the dramatic fly of foreign direct investment to Thailand, the economy suddenly plunged in 1997.

The reasons of this economic crisis are explained by the conventional economic development that the great growth was due to the excessive reliance on foreign capital and technology, and low wages of unskilled labor which attracted foreign capital without necessity of raising productivity. Thai economy collapsed because of the leaky- economy base and the undeveloped capacity. To relieve the social and economic crisis, the government has become

to increase the public capital injection. Many of the government projects were aimed to enhance the GDP and improve the productivity of human beings; such as the Miyazawa plan, the One Tambon One Product Project, The Village and Urban Community Fund, and the educational reform. Moreover, in 2002, the governmental reform was practiced and established the Ministry of Social Development and Human Security to respond for the human development strategy of Thailand.

**Figure 2** The role government to productivity and the microeconomic business environment



Source: Porter(2003: 14,60)

For the sake of public sides, many tools for government have been practiced to stimulate labor productivity, for example, improving the educational system and quality of graduates, or investing in the health center.

One direct method to encourage the labor capacity is public investment, which provides and enhances the factor conditions, which is one of the four microeconomic business environments shown in Figure 2. Many empirical studies identified that public capital is actually significant on output such as Ratner(1983), Lynde and Richmond (1993), and Suwanrada (1999).

However, the research that directly determines the effect of labor productivity is not widely studied in Thailand. It is usually calculated by an average approach in manufacturing and service sector. Some of the evaluated labor productivity was the by-product results of the Total Factor Productivity Growth, but, those figures are not quite vicinity to each other and are determined in different periods.

In order to seek a better understanding of labor productivity and reflect the effectiveness of public and private capital in the practical way, this paper aims to evaluate the value of thai productivity and the role of both public capital and private capital. Furthermore, the most suitable technical progress, as well as human capital in catch up approach, is also considered. While most economists has commonly used the Hicks neutrality to estimate the production function, the different technical approaches of various countries are empirical studied in Beckman and Sato (1969) and found that each country might be charecterized by a different type of technical progress. It is possible that Thailand might produce in other types of technical approaches instead of Hicks neutrality. Since this aspect will effect to the policy implication, the technical approach is taken into account as the alternative feature of Thailand's production function.

The study hypothesizes that both public capital and private capital are significant factors, are encourage an improvement in labor productivity. However, their relationship of roles on labor productivity is interesting and eagerly waiting to view in the findings of the study.

## **1.2 Objectives of the Study**

1. To calculate the value of labor productivity of Thailand during 1971-2003, classified into 3 sectors; agriculture, industry and service.

2. To investigate whether public capital and private capital have significant impacts on Thai labor productivity.
3. To compare between the role of public capital and private capital to labor productivity.

### 1.3 Scope of the Study

The study will evaluate labor productivity using secondary annual time-series data of Thailand during 1970 - 2003 and investigate the role of the public and private capital to labor productivity during 1971-199<sup>1</sup>, classified into 3 sectors, agriculture, industry, and service. The data required are mainly drawn from the Labor Force Survey, the National Statistic Office (NSO), the Bank of Thailand (BOT), and the National Economic and Social Development Board (NESDB).

### 1.4 Definition

*Employed Persons(L)*, defined by The National Statistical Office used in Labor Force Survey, are persons, 11 years of age and over who during the survey week,

- 1) worked for at least one hour for wages, profits, dividends or any other kind of payment, in kind; or
- 2) did not work at all but had regular jobs, business enterprises or farms from which they were temporarily absent because of illness or injury, vacation or holiday, strike or lockout, bad weather, off-season or other reasons, such as temporary closure of the work place, whether or not they were paid by their employers during their period of absence, provided that in the case of temporary closure of the work place, the expectation was that it would be reopened within 30 days from the date of closure and they would be recalled to their former job; or
- 3) worked for at least one hour without pay in business enterprises or on farms owned or operated by household heads or members.

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<sup>1</sup> Because of the data limitaion. The most recently data available of net capital stock of Thailand in February 2003 is limited in 1999 and the human capital with catch-up technology can be calculated since 1971.

Note that, NSO has changed concepts and definitions many times since the initial year. During the scope of study, the changed definition of the age of employed persons is as following table:

**Table 1** The changed definition of the age of employed persons

Period	Age
1971-1988	11 years old
1989-2000	13 years old
2001-2002	15 years old

**Source:** Conclusion from Labor Force Survey 1971 - 2002

It should be remarked that since 1996 the concept of "Labor Force" was revised to cover persons with the age of 15 years and over, as opposed to the original concept of 13 years and over.

In this study, the employed person is determined at age 15. The proportion of labor force lower than 15 years old (during 1971-2000) is used to adjust the statistics. The figures are annually averaged from the labor force survey in each year.

The data is classified into 3 sectors; Agriculture, Industry and Service.

- Agriculture: The variable of agricultural production function is added by the "land" due to the necessary utilization in agricultural sector.
- Industry: mining and quarrying, manufacturing, construction, electricity and water supply
- Services: the transportation and communication, wholesale and retail trade, banking insurance and real estate, ownership and dwelling, public, and administration and defense, and services

*Land(Land)* is the additional factor to the agricultural sector as it could be argued that for the developing country the technology of this sector is quite low, and the output increases by extensive cultivation. The figure is drawn from the National Statistic Office (NSO) in the number of planted area (Rai).

*Output(Y)* is Gross Domestic Product (GDP) excluding the inflation rate by weighted the base year, 1988, called GDP at constant prices or real GDP. It is the value of all-final goods and services produced within the territory of a country by using domestic factors of production within a year at the price of year 1988. The figures are classified into 3 sectors, and drawn from the National Economic and Social Development Board (NESDB).

- The agricultural sector is the value of GDP in agricultural sector.
- The industrial sector consists of the value of GDP in mining and quarrying, manufacturing, construction, electricity and water supply.
- The service sector is composed of and consists of the value of GDP in transportation and communication, wholesale and retail trade, banking insurance and real estate ownership of dwelling, public administration and defense, and services.

*Public Capital(G)* is the net stock of equipment and accumulated investment of public sector (Government Investment Expenditure (GIE)). The capital is defined as the durable goods (more than 1-year lifetime) that were established in the economy, visible and can be rebuilt. However, military durable goods and household durable goods are not included.

The figures are brought from the National Economic and Social Development Board (NESDB), and measured by the Perpetual Inventory Method (PIM).

The Gross capital stock is evaluated by accumulating gross fixed capital formation from the first year to the current year minus the value of capital retirement. The accumulated depreciation over the same period has to be subtracted from the total value of gross capital stock to gain Net Capital Stock. This is equivalent to the net capital stock in the previous year plus gross investment in the current year minus annual depreciation. Both figures of public and private capital stock are precisely collected and shown as a calendar year not a budgetary year.

This study utilizes the figures from net capital stock of public sector at 1988 price in this study due to its actual value as subtracting the accumulated depreciation and classified into 3 sectors: agriculture, industry, and service. The classification method is the same as output.

There were some previous studies found that the public capital, highways, water, and sewers, was positive and significant to output, while the coefficient on other public capital is negative and significant to output such as Milà et al.(1996). This study assumes that the effect of public capital even excluding those kinds of public capital depends on government decision are significant to labor productivity in at least through indirect tunnel.

*Private Capital(K)* is the net stock of equipment and accumulated investment of private sector, classified into 3 parts, agriculture, service, and industrial sector. The capital is defined as the durable goods (more than 1-year lifetime) that were established in the economy, visible and can be rebuilt excluding household durable goods. The figures are drawn from Net Capital Stock of private sector at 1988 price, National Economic and Social Development Board (NESDB), also measured by the Perpetual Inventory Method (PIM) as public capital. The data will be classified the same as output and public capital, 3 sectors: agriculture, industry, and service.

*Human Capital A(H)* is a human who has the ability of work and productivity as well as the ability to adapt technological advance from leading countries. The definition and formular of human capital in this study will be displayed in section 5.1.1. We assume that the one with higher education has more productivity.

The growth rate and the level of human capital are the growth rate and number of the employed person graduated upper than lower secondary in each sector as defined:

- 1) lower secondary refers to any person who completed Matayomsuksa 3 (Formerly Matayom 3 or Matayom 6) or higher but not upper secondary.
- 2) Upper secondary refers to any person who completed Matayomsuksa 5(Formerly Matayom 6 or Matayom 8) or higher but not college or university
- 3) Vocational and technical refers to any person who completed a lower secondary and have then completed the three-year course required for this level.



#### 4) University

(1) Academic refers to any person who completed a course receiving a diploma, persons receiving the bachelor degrees, master and Ph.D, except for persons who hold the bachelor degrees, master and Ph.D in teacher training, from colleges of physical education and a college of education.

(2) Higher technical education refers to any person who completed vocational or technical education, who, having received a certificate which is equivalent or higher to a technical certificate, persons receiving a diploma or higher but not equivalent to the bachelor degrees.

5) Teacher training refers to any person who completed the teacher training course and receiving a certificate of the bachelor degrees in education from teacher college, a college of physical education and a college of education.

This variable is also classified into 3 sectors; agriculture, industry and service.

- Agriculture, forestry, hunting and fishing
- Industry: mining and quarrying, manufacturing, construction, repair and demolition, electricity, gas, water and sanitary services, commerce, transport, storage and communication
- Services

Since 2001, the data have been classified different from previous years. The classification is as following.

- The agricultural sector is composed of the employed persons in agricultural, hunting and forestry, and fishing industry.
- The industrial sector consists of the employed persons in mining and quarrying, manufacturing, electricity, gas and water supply, construction industry.
- The service sector is the amount of employed persons who are working in the wholesale and retail trade, repair of motor vehicles motorcycles and personal and household goods, hotel and restaurants, transport, storage and communication, financial intermediation, real estate, renting and business activities, public administration and defense, compulsory social security, education,

health and social work, other community, social and personal service activity, private households with employed persons, extra-territorial organizations and bodies, and unknown industry.

The numbers are drawn from Labor Force Survey. The leader country's income, GDP, drawn from the Statistic Division of Japan, is needed to calculate the catch-up technology proxy. The sectors of GDP of Japan is classified as:

- The agricultural sector is composed of GDP of agriculture, forestry, and fishing industry.
- The industrial sector is mining, manufacturing, construction, and electricity, gas and water supply industry.
- The service sector consists of the wholesale and retail trade, finance and insurance, real estate, transport and communication, service of both industries and government services, also, public administration private non-profit services, import duties, and statistical discrepancy. The sum up value is deducted by the amount of others and imputed bank service charges.

### **1.5 Organization of the Study**

The study consists of 5 chapters. The first chapter is the introduction part, background and rationale. The next chapter reviews the background of public capital and private capital. The third chapter is the theoretical framework followed by literature review. The methodology and the model will be developed for the study in a later chapter. The sixth chapter is the empirical result according to the data. The empirical results will be summarized and concluded in the seventh chapter.

### **1.6 Possible Benefit of the Study**

The estimated value of labor productivity will directly be useful for economist and general public concerns. Moreover, the human capital in various technical approaches will help to perceive the character of the economy

thoroughly. It will benefit the government in order to understand the effect of labor productivity through the process of production by public capital and private side. It is expected to be a useful tool in order to impose policies to drive better labor productivity and enhance an effective economy.