

# CHAPTER 1

## INTRODUCTION



### 1.1 The Problem and Its Significance

On October 16, 1995, at a celebration graciously presided over by Her Royal Highness Princess Maha Chakri Sirindhorn marking the Food and Agriculture Organization of the United Nation's celebration of its Fiftieth Birthday, H.E. Anand Panyarachun gave a speech, with words that are still important to consider today.

The first myth is that agriculture is static and technologically backward. This is simply false. Throughout this century, the application of genetics has borne fruit, and will continue to do so. It is precisely because of this dynamism that food prices have increased less than the prices of manufactured goods over the last hundred years. Of course, these scientific and technological advances do not fall like manna from heaven, but have to be striven for - they have to be invested in, both by the national government and by international agencies. [...]

Falling food prices, although of great benefit to mankind generally, not least to the urban poor, place an increasing burden on agriculture everywhere. The burden is for every farmer to increase productivity to keep ahead of the falling prices. And that productivity increase can only be obtained by putting more scientific resources into research. Past history has shown, and current science is indicating, that further strides can be made in increasing farmers' productivity.

From inspired thoughts such as these, comes the inspiration for small studies such as this thesis. If further strides are to be made in increasing farmers' productivity, it would be most useful to have a more clearly defined set of standards for measuring economic productivity growth, particularly as relevant to agriculture. In Thailand this may be a particularly important time to refocus the attention of economists, policy makers and others on the agricultural sector.

While agriculture had historically been the most important sector of Thailand's economy, by the 1980s it was overshadowed by a booming manufacturing sector. As a result of the rapid growth in the manufacturing sector, Thailand and other East Asian countries were christened the "Asian Miracle" by the World Bank in 1983. However, this all seemingly came to an abrupt end with the Asian Financial crisis in 1997. Much argument began in the 1990s and continues as to the reason behind both the exponential growth and the sudden collapse of Thailand's economy.

The agricultural sector, which lost the interest of many in the heydays of this economic "miracle", may not have been so severely affected by the financial crisis. Indeed, it is thought to have provided a stabilizing effect and has continued to provide a major source of employment and income in the Thai economy. What is it that drives this seemingly solid sector of the Thai economy? A better understanding of sources of productivity growth would benefit the whole country.

## 1.2 The Agricultural Sector in Thailand

The Thai agricultural sector has been historically characterized by its strong comparative advantage. This advantage is particularly pronounced when one takes into account the past existence of policy bias against agriculture in the form of export taxes (as described by Siamwalla, 1996). Once the great engine of Thailand's industrial growth, in the 1960s and 1970s, agriculture facilitated industrialization by supplying cheap food and labor, generating tax revenues and foreign exchange, and providing a market for industrial output.

During the 1950s, 1960s, and 1970s, surplus land and demand for food exports encouraged Thailand's first wave of diversification out of rice and rubber. Farmers expanded production of upland field crops, particularly to grow cassava, kenaf, maize, and sugar, and also mung beans and sorghum. Expansion was achieved through extension of capital investment, and though large public investments in roads and primary irrigation supported steady growth in output. Modest improvements in yields were added to many of these crops, including rice, but yields declined measurably in cassava, sugarcane, and mung beans (Onchan, 1990).

A second wave of agricultural diversification began in the late 1970s. This wave was marked by a shift into fruits, vegetables, oilseeds, tree crops, beef, poultry, swine, dairy cattle, and prawns. Many of these commodities require advanced processing technologies and thus yield higher value added at the processing stage. Some are import-competing commodities, and some are used as inputs for export-oriented manufacturers. To support this shift, the Board of Investment (BOI) revised its Investment Promotion Acts in 1972 and 1977 to promote capital-intensive processing on a broad scale. One consequence of these privileges has been rapid growth in food industries, which now constitute nearly one-third of total value added in manufacturing (Christensen, 1992).

Now in Thailand's agricultural sector the four most important food crops in terms of the planted area and the value of production are rice, maize, sugarcane, and cassava. The first three are important domestic food commodities as well as foreign currency earners, while the fourth is predominantly an export crop. Other major upland crops are mung bean and soybean in the northern region and kenaf in the northeastern region. Mung bean and soybean accounted for nearly half a million hectares and 0.23 million hectares of the total cultivated land, respectively. Other agricultural crops are grown in the southern region, where the most important crop is rubber. While these continue to be Thailand's major crops, Thailand is also becoming a major producer of tropical fruits (e.g., pineapple and longan) and horticultural crops (e.g., orchids) for export. This increase in specialty crops has continued even after the financial crisis.

### 1.3 The Role of the Agricultural Sector in Thailand's Economy

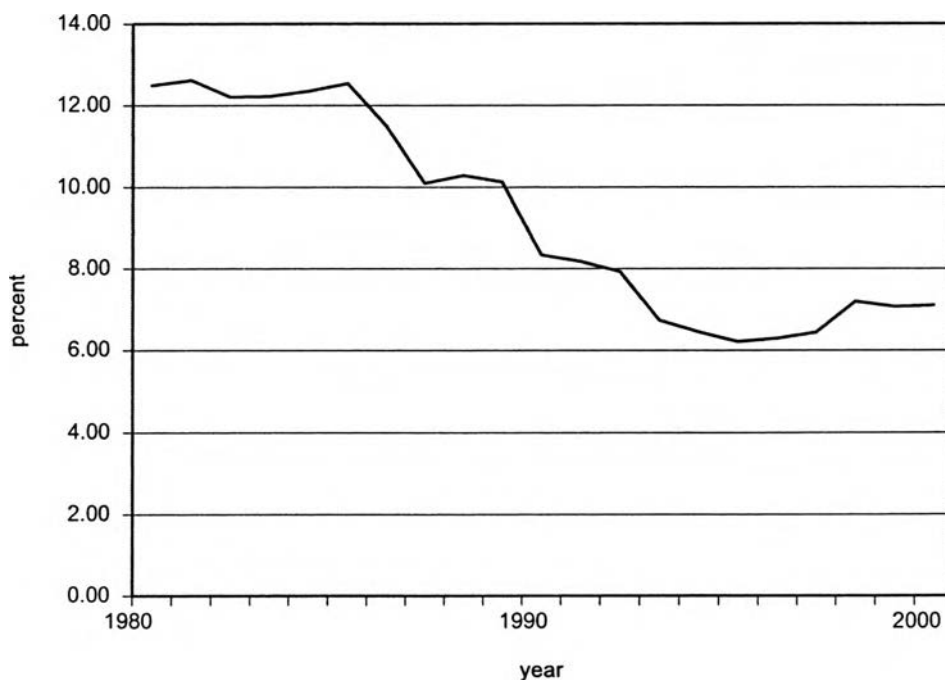
International trade has long been vital to the Thai economy. Thailand's entry into foreign markets in the mid-19th century enabled its economy to expand rapidly. Today, export and import transactions together account for about half of the national income.

The makeup of the Thai economy remained virtually unchanged up to the late 1950s. Then, in the early 1960s, the industrial and service sectors began supplementing agriculture as significant income and employment generators. The

industrialization process initiated during the 1960s was geared towards import-substitution. It was succeeded in the 1970s by a drive to produce export-oriented items. By the mid-1970s Thailand was exporting manufactured goods from a very wide range, including cement, watch parts, canned fruit, clothing, chemical products, and television sets.

Today, Thailand is still predominantly an agrarian country, with about 57 percent of its working population engaged in agricultural production and earning about 10 percent of the national income. Over the years, however, the industrial and service sectors have been increasing their shares of the total GDP. The agriculture sector's contribution to the Gross Domestic Product (GDP) declined from about 40 percent in 1960, to 13 percent in 1980, to 9 percent in 1990, to 6 percent in 1996 due primarily to the rapid expansion of other sectors of the economy. The sector rebounded slightly after the financial crisis and has contributed around 7 percent of the total GDP per year from 1998 through 2000.

Figure 1. Agricultural GDP as a Percent of Total GDP, 1988 prices



(source: NESDB)

At the same time, the manufacturing sector expanded very rapidly, increasing its portion of the real GNP (1988 prices) from 13 percent in 1960 to 37 percent in 1999. Such a structural change does not, however, imply that agricultural output failed to increase during the period. On the contrary, it increased by about five percent per year. Moreover, a high degree of diversification took place, enabling Thailand to boost its export items from only three major commodities namely rice, teak and rubber in the early 1950s to more than ten main agricultural products in 1993.

Agriculture exports were the major source of foreign exchange earning during the 1960s and 1970s. However, as Thailand's progress towards industrialization increased, manufactured exports gained importance. In 2000, exports of agricultural products amounted to only about 7 percent of total exports compared with about 11 percent in 1996, and 40 percent in the early 1980s.

The Thai economic boom of the 1990s caused the rate of agricultural decline to accelerate. Agriculture, which had been the central pillar of Thailand's economy, both the largest source of employment and a major source of export earnings, captured only a tiny fragment of the investment boom. Further, as the most labor-intensive sector in the country, agriculture found itself increasingly unable to compete with wages offered in other industries. Rapid mechanization was one response to rising wages; declining land area planted to crops was another. While the economy boomed, agriculture experienced negative real growth in 1991 and again in 1993 (Coxhead and Plangpraphan, 1999). The bubble economy further affected agriculture through changes in land use associated with land speculation (Siamwalla, 1999).

In 1997, however, the economic bubble reversed and became The Asian Financial Crisis. The Thai economy faced significant levels of unemployment for the first time in its modern history. This probably did not lead to a huge "return to the farm" reverse migration as initially expected. Although the rapid movement of labor out of agriculture in the 1980s and early 1990s indicates a high degree of mobility, this mobility may be much greater away from the farm than back again, as predicted by Harris and Todaro's (1970) migration model. Indeed, the trends observed in agriculture by

Siamwalla (1999) indicate that the financial crisis seems to have affected the agricultural sector to a much lesser extent than one might have expected. He concludes that the agricultural sector weathered the crisis better than other sectors, because it did not benefit from the preceding bubble as much as the others did.

#### 1.4 Importance of Trade in Economic Growth and the Agricultural Sector

The importance of economic growth is now well understood and defined in its relationship to the success of an economy and the level of wealth achieved by a country and its inhabitants. Even small percentage differences in economic growth can have a profound effect on an economy over the long run. Therefore, it is of great interest to study economic growth. Of particular interest in this age, when we have witnessed a regional economic crisis apparently caused by rapid reversal of capital flows and when trade has become a hotly debated political issue, is finding ways to achieve long-term or sustainable economic growth.

The last decade has shown markedly different economic experiences for different parts of the world. The large, developed economies of the United States and European Union fared quite well, indeed the US is experienced the longest expansion in its economic history. All sectors of the economy were developing and experiencing different ways of producing and delivering goods and services, enabling this unprecedented expansion. Many, including the US Federal Reserve Bank, believe growth was due in large to sustainable productivity growth in the form of increased diffusion and use of new technology throughout the economy.

On the other hand, the slow down of growth in South East Asia has been much more pronounced and quite painful. In 1997 a financial crisis began in Thailand that grew to effect all of the countries in the region and many beyond. As described by Fernandez-Arias and Montiel (1996), capital inflows prior to the crisis were unlikely to be sustained. They noted that the inflows were likely to be replaced with outflows or even a balance of payments crisis.

How could there be such dramatically different events occurring in different parts of this global economy at the same time? What factors need to be better understood to prevent such a situation from occurring again? The answers, it would appear, are in the different factors of economic growth and their different implementation in different areas of the world.

The early neoclassical models defined growth as a function of capital and labor, but usually treated technology as an exogenous variable, the infamous "black box". More recent definitions of growth theory are all varying attempts to define that black box, to make the exogenous variable endogenous. Many new and useful theories and information have come about as a result. Yet invariably, as with any black box, insight into one area typically leaves another area unexplored, or exposes still another black box. For this reason, development into new growth theory has taken many paths. This thesis makes an attempt to open yet another black box, and further the field of information making up new growth theory.

From early studies, the three factors of economic growth are capital, labor and technology. Technology in particular is seen as a source of long-term positive growth. Both common sense and empirical evidence show that technology growth is always a positive value in the growth equation.

Recent advances in growth theory indicate factors such as physical investment, the vintage effect studied by Wolff (1996) and by Gera, et al. (1998a), or learning by doing have a much greater impact on productivity than traditional growth theory would suggest.

Social scientists and economists have studied the effect of trade on technology growth, and specifically the effect of trade on learning. Although not as obvious a mechanism of learning as technology transfer, "trade-induced learning" is potentially more important in the magnitude of its effect on an economy. Trade with advanced countries can increase the growth rate of developing countries through trade-induced learning. This learning is influenced both by the technology level of the more advanced trade partner and the characteristics of the goods being traded.

Knowledge is key to technology, and measuring ways knowledge is generated and passed around is thus critical to understanding economic growth. As Weitzman (1998) notes, "a central goal of growth theory has long been to get inside the black box of innovation and pull out an explicit model of knowledge production."

It would be of great interest, therefore, to develop a method to account for this trade-induced learning process, and its effect on productivity, particularly in the agricultural sector. Quantitative knowledge of this factor would be useful both to measure its influence in Thailand, and as a resource for those who are empowered to steer the country's agricultural trade policy to encourage that which most benefits sustainable growth of the economy. This research is an attempt to begin doing just that.

The historical development of an economy, leading to a simultaneous decline of agriculture and rise of the manufacturing industry, and the associated shift of comparative advantage from the former into the latter, are well-established theories of economic development. Kuznets (1966) further hypothesized that economic development is characterized by a first increasing and then decreasing level of inequality between the agricultural and industry sectors, due to an initially widening but eventually narrowing gap between agricultural and industrial labor productivity. While the decline of agriculture and rise of manufacturing is considered standard in the evolution of a growing economy, this is not necessarily a universally beneficial progression. Thailand's simultaneous decline of agriculture and rise of manufacturing industry have been associated with continuously widening gaps of labor productivity between the sectors (Poapongsakorn et al., etc.). Consequently, inequality has increased, with poverty becoming concentrated in rural areas. In order to reverse this trend, the promotion of agricultural labor productivity and the maintenance of what is left of Thailand's comparative advantage in the agricultural sector are imperative.

The study of economic growth in the Asian newly industrialized economies (Taiwan, Hong Kong, Singapore, and South Korea) has pointed to their common adoption of outward-oriented trade policies as a significant factor in achieving their remarkable growth.



Where recent economic crisis has further emphasized the need to better understand the basis for sustainable forms of economic growth, recent trade disputes exhibit a need to better understand the long-term and sustained effects of trade on economies. Understanding is needed so that decision makers will move away from choices made on the basis of political popularity and opinion polls, decisions that may seem emotionally sound at the moment, but lack the foresight to assess long-term effect on huge numbers of people. It is often noted that trade liberalization poses a number of problems for developing countries both at the national and the international level. There are many nations questioning as never before how to cope with the new international economic relationships and how to cope with the full immersion into the world economy caused by WTO membership.

This research seeks to measure an indirect effect of trade on productivity growth. This could be a function of induced learning, and could be a very valuable economic side effect of trade. It can also be observed that this paper may shed some insight into the effects of imports versus exports on productivity growth. This is a secondary issue to this project, but of clear interest if one considers the debate that can be found on the news or by reading current literature.

### 1.5 Considering Policy and Agriculture

The public sector supports the economic growth process by providing developmental facilities through the construction of basic infrastructure and by creating an environment conducive to the effective operation of the private sector. It can provide a bias for or against the use of production factors. It can also directly or indirectly support education, research and development, and the acquisition of new technology. All of these roles have an effect on productivity.

Thailand's National Economic and Social Development Plans (including the Seventh and Eighth plans) address the importance of productivity in sustaining the country's economic growth and maintaining international competitiveness. Productivity growth is becoming particularly important considering that Thailand's traditional economic advantages, through abundant supplies of such production factors as land

and labor, are diminishing. This is of particular concern within the country's agricultural sector.

In the past, the government has implemented policies to improve agricultural productivity, such as in 1975 with the government deregulation of the fertilizer market. This allowed for more competition in this market, made fertilizer prices much cheaper, and thereby had some impact on raising farm productivity through increasing the amount of capital input available.

The regulation and role of agricultural credit has also been important in Thailand's agricultural productivity, mainly through making additional short-and long-term credit funds available of farmers. There are two sources of institutional credit for agriculture, the publicly owned BAAC and the commercial banks. Expansion of agricultural credit in the 1990s increased substantially. Increased agricultural lending resulted from the Bank of Thailand's provision that 20 percent of total commercial bank deposits (up from five percent in 1975) be lent to farmers directly or through the BAAC. In addition, two percent of the total is to be lent to the agribusiness sector.

New policies enacted recently, such as the scheme to give one million baht to each village have probably not yet had enough time to show any significant effect in the agricultural sector. However, it is interesting to note that some of the traditional credit providers such as BAAC are now venturing into other areas to support farmers, such as through the provision of information in the forms of a semi-private extension function. If successful, this would certainly lend support to technology diffusion, and thereby productivity growth.

## 1.6 Agriculture in the Global Market

Many countries are actively pursuing the export market as the key source of economic growth, and while in the past this has contributed to the tremendous growth rates of the small to medium sized South East and East Asian nations, now big countries are beginning to enter the same game. A country such as China still has a huge amount of human resources that can be utilized in export industries. If China, and

presumably countries of South Asia, can gain and maintain comparative advantages in key industrial trade products, then not much room would be left for other countries.

Under current and expected future trends, one can expect that the fierce competition between countries in the world market will lead to rapid changes in comparative advantages among countries. Even now capital and technology are highly mobile. Production bases can easily shift to take advantage of the most cost-effective location anywhere in the world. A country can quickly find itself losing comparative advantage in products that have been a main impetus for the country's growth, as production elsewhere becomes more cost effective. As more and more countries are pursuing the export-led path, choices as to where to locate the production base for various products are now more numerous. In the case of Thailand, the experiences over the past decade or so illustrate this trend quite clearly.

The agricultural sector will remain a significant factor in maintaining and stabilizing economic growth. Equally important, it also serves as the input base for agribusiness, processing and related industries. Thailand will continue to encounter structural change in world demand for its major traditional agricultural products, due to various developments ranging from technology to changing tastes. Consequently, policies that have an effect on product diversification, improved technology, research, and marketing strategy will be critical to the sector's survival.

### **1.7 Scope of the Research**

This thesis is concerned with the agricultural sector in Thailand. Here, the agricultural sector is limited in its definition to crop products, not including fisheries, forestry, or other elements that might be found in a broader definition of agriculture. The thesis does not attempt to predict or forecast the future, but instead analyses the past in an ongoing attempt to guide correct policy and decision making to ensure a bright future.

## 1.8 Organization of the Report

This thesis has five sections. Having first laid out the historical scenario and current state of the Thai agricultural sector, and its relationship to the Thai economy, this thesis continues with a review of some existing literature and builds on the case for analysis in chapter two. Chapter three explains the research methods, the empirical and econometric framework used for analysis, and the data collection method. The analytical results are presented and described in chapter four, followed by a summary and some recommendations in the final chapter.