Agricultural Based to Manufacturing Oriented Growth: In the Case of Thailand

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Abstract

In Thailand, agriculture has been the foundation for the rapid development of many industries, in the form of the raw materials, intermediate goods, and domestic food. Many industries in Thailand have to rely on the agricultural sector as a supplier of some important raw material. Also, most manufacturing workers are from rural areas and many of these workers work in manufacturing when it is not the harvest period. By the nature of the prevailing medium-sized industries and labor-intensive industries, many manufacturing firms are still dependent on the agricultural sector. Nevertheless, the policy over the past decades in Thailand has been to promote the manufacturing sector and lessen the importance of the agricultural sector. One might question why the government decided to do so? And what have we learned from Thailand's experience? As well, what did the data present some learning experience during Thailand major financial crisis?

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Such understandings of the phenomenon of this case study developing from the real experience of the Thai economy are beneficial for studying the changes of Thailand's development and competitiveness position in the World market, the changes of Thailand's agricultural and manufacturing proportions, and policies manipulation. Some aspects are also worth discussing, leave for analysts to brainstorm in class like basic understandings to how each economic sector has been affected, like agricultural, manufacturing, services sectors, in terms of firms, producers, and consumers. As well, some discussions are about economic stability aspects.

Keywords: Economics Development, Agriculture, Manufacture, Thailand

จากรากฐานด้านเกษตร...มาสู่การมุ่งเน้นอุตสาหกรรม เพื่อการเติบโต: ในกรณีประเทศไทย

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บทคัดย่อ

ในประเทศไทยการเกษตรได้เป็นรากฐานสำหรับการพัฒนาอย่างรวดเร็วของหลายอุตสาหกรรมในรูปแบบของวัตถุดิบ สินค้าขั้นกลาง และอาหารภายในประเทศ หลายอุตสาหกรรมในประเทศไทยต้องพึ่งพาภาคการเกษตรในการเป็นผู้ผลิตวัตถุดิบที่สำคัญ นอกจากนี้ ส่วนใหญ่คนงานภาคอุตสาหกรรมยังมาจากพื้นที่ในชนบท และทำงานในภาคอุตสาหกรรมเมื่อไม่ได้เป็นระยะเวลาเก็บเกี่ยว โดยธรรมชาติของอุตสาหกรรมขนาดกลางและอุตสาหกรรมที่ใช้แรงงานเข้มข้นนั้นมีการผลิตจำนวนมากที่ยังคงขึ้นอยู่กับภาคการเกษตร อย่างไรก็ตาม นโยบายในช่วงหลายทศวรรษที่ผ่านมานั้นประเทศไทยกลับได้มีการส่งเสริมภาคอุตสาหกรรมและได้ลดความสำคัญของภาคการเกษตรลง บางคนอาจเกิดคำถามว่าทำไมรัฐบาลจึงตัดสินใจที่ทำเช่นนั้น? และเราได้เรียนรู้จากประสบการณ์ของประเทศไทยอย่างไรได้บ้าง? รวมทั้งข้อมูลดังกล่าวได้นำเสนอประสบการณ์การเรียนรู้บางอย่างในช่วงวิกฤติการเงินไทยที่สำคัญได้อย่างไร?

ความเข้าใจดังกล่าวของปรากฏการณ์ของกรณีศึกษานี้ได้พัฒนาจากประสบการณ์จริงของเศรษฐกิจไทยซึ่งจะเป็นประโยชน์สำหรับการศึกษาการเปลี่ยนแปลงของการพัฒนาของประเทศไทยและตำแหน่งในการแข่งขันในตลาดโลกซึ่งไทยได้มีการเปลี่ยนแปลงของสัดส่วนภาคเกษตรและอุตสาหกรรมรวมไปจนถึงการจัดการด้านนโยบาย บางแง่มุมที่ได้นี้ยังมีประโยชน์ในการแลกเปลี่ยนมุมมองและทิ้งท้ายไว้สำหรับนักวิเคราะห์เพื่อระดมความคิดในชั้นเรียน เช่น ความเข้าใจพื้นฐานในการที่แต่ละภาคเศรษฐกิจที่ได้รับผลกระทบอย่างไร ทั้งภาคเกษตร ภาคอุตสาหกรรม ภาคบริการ

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ในแง่ของ บริษัทเอกชน ผู้ผลิต และผู้บริโภค รวมทั้งการอภิปรายบางประการเกี่ยวกับด้านความมีเสถียรภาพทางเศรษฐกิจ

คำสำคัญ: เศรษฐศาสตร์การพัฒนา การเกษตร อุตสาหกรรม ประเทศไทย

On Aug 23, 2011, Thai Prime Minister Yingluck Shinawatra delivered her government's policy statement to the Parliament, the joint sitting of the senators and members of House of Representatives, pledging to run the country with honesty and efficiency to reunite the country and bring happiness back to the Thai people. The prime minister classified the policies into urgent policies which need to be implemented in the first year, included national reconciliation and the restoration of democracy, as well as rehabilitation plan for those of all parties who have been affected in several years of political divisiveness. The urgent policies also included the drugs problem as a national agenda concern, along with an integrated water management plan to prevent and manage flooding, restoring relations with neighbouring countries, reducing income tax for juristic persons and improvement of the public's quality of life through, for example, wage increases and debt suspension for farmers.

For the four-year plan, Ms Yingluck focused on national security including reverence for and protection of the monarchy and the country's defence system, the transparency and efficiency of the country's administration, improvement of social conditions and quality of life, policies regarding lands and natural resources and environmental management. Ms Yingluck also pledged to Parliament that her government would run the country transparently and efficiency so that the country will be able to compete with other countries and that peace and happiness be restored to the Thai people.

Meanwhile, some scholars commented that the government's policy statement still failed to enhance Thailand's industrial and agricultural competitiveness, which is a primary selling point of the country. By the fact that Thailand has been developed by several decades of national development plans, the first of which began in 1961. As an economic advisor to the government, Miss Jaidee Ruksa-ngob receives an assignment on the issue of economic sectors strengthening. She needs to study the importance of each economic sector; mainly, manufacturing and agricultural sectors, and link them to the economic theory and some development in national plans, then advises to the government for the policy direction. She starts with agriculture and manufacturing development interrelations.

Agriculture and Manufacturing Development Interrelations

Hirschman (1958) stated that "agriculture certainly stands convicted on the count of its lack of direct stimulus to the setting up of new activities through linkage effects—the superiority of manufacturing in this respect is crushing." In their classic work, Johnston and Mellor (1961) outlined five roles that agriculture should play in economic development: increasing the supply of food for domestic consumption, releasing labor for industrial employment, enlarging the size of the market for industrial output, increasing the supply of domestic savings, and earning foreign exchange.

The view that agriculture is interrelated with industry was also posited in Schultz (1953), Jorgenson (1961), and Nicols (1963). The importance of agriculture was emphasized by Timmer (1988), who wrote,

> "The sheer size of agriculture in most poor countries' economies, with over 50 percent of national output and up to 80 percent of the labor force in agricultural activities, distinguished the sector from all others in the early stages of development. When directly related input and output industries and marketing activities are included, 'agribusiness' seldom declines to less than 20 percent of any country's economy. Hence the sector remains the largest single 'industry' in absolute size even in rich countries."

This case study examines agriculture and manufacturing sectors in the development of the Thai economy. Thailand's economy was almost completely agriculture-based, at least until the economic reforms of the 1960s. During the 1950s, Thailand's three major exports were agricultural products: rice, teak, and rubber. In 1960, the agricultural sector accounted for 40% of Thailand's GDP and employed the majority of the Thai work force[1]. At the time, many of the nation's manufacturing facilities were involved in processing agricultural products. Sawmills, rice mills, ice factories, tobacco-curing plants, sugar-processing facilities, and canneries employed large numbers of people. In this regard, it is perhaps not an overstatement that agriculture played an extremely significant role in the Thai economy and could be considered the primary force driving the economy during those years.

Today, Thailand's major manufactured exports include cement, heavy machinery, chemicals, pharmaceutical supplies, iron and steel products, electrical components, and computer chips. This jump in manufacturing concerns has also led to growth in the service sector of the economy and has narrowed the Thai trade deficit. As of the twenty century, Thailand's manufacturing sector continues to grow[2] and can be considered the fastest growing economic sector. At the same time, however, Thailand is still the world's leading exporter of rice and tapioca, and is a major producer of canned pineapples, frozen shrimp, sugar, and natural rubber, as well as a multitude of other fresh fruits and vegetables.

Development of the Country during the National Plans (1961-1986)[3]

Thailand has been developed by three decades of national development plans, the first of which began in 1961. External political pressure, the need to rebuild the country after the Second World War, and the demand for the elimination of inequality in income between urban and rural sectors, are the major factors that have influenced the development effort.

The first National Plan resulted in tremendous changes in the country's infrastructure, including improved transportation, roads, and railways, and a rise in the number of educated persons. Income generation was also a primary focus. The figures given in Exhibit 1 suggest, at first sight, that the country has developed positively with regard to education, the economy, and technology.

In the initial stage of national development, agriculture was emphasized with a view to meeting both domestic and export needs. As early as the sixteenth century, the export of agricultural commodities occurred as a result of foreign influence, which changed the economic and production structure of the country. The demands of the external market expanded the area under cultivation. But this extensive growth resulted in a great loss of forest resources (see Exhibit 1). However, one should note that even in 1985 the majority of the population was still living in rural areas; the increase in production occurred essentially through the exploitation of traditional technologies.

The first National Economic Development Plan (1961-1966) focused primarily on developing agriculture to meet world market demands. The import substitution industry was also a central concern. During this period of transformation, the government helped provide the necessary infrastructure and develop technical skills, while the private sector was urged to participate in production under the close guidance of the government.

Replicating or buying appropriate technology was not considered. In agriculture, although foreign technologies had some influence, the majority of farmers still used indigenous technologies. However, the output of agricultural products increased satisfactorily, as a result of extensive cultivation.

In the second National Economic and Social Development Plan (1967-1971), the basic roles of government and private sector remained unchanged. The government continued to construct physical infrastructures, such as roads, railways, and irrigation dams, as well as providing the rural community with important health services. The private sector, on the other hand, was being continuously urged to put more effort into the production of industrial goods. The government continued sending students abroad and the purchase of technological items continued. There was a continued neglect of mechanisms for selecting and controlling foreign technology.

Within the agricultural sector, an increased use of modern production technologies, in the form of chemical fertilizers, pesticides, and small farm machinery, was pursued. Most of these, however, were imported. Although agricultural production increased tremendously, it did not keep pace with the increased production costs. (That is the percentage change in higher production output is less than the percentage change in higher total cost.)

As a consequence of the second National Plan, certain undesirable phenomena emerged. These included a higher unemployment rate, a higher migration rate, and water pollution resulting from the drainage into waterways of chemical residues and waste materials from manufacturing. The government responded in the third National Economic and Social Development Plan (1972-1976) by imposing regulations and codes. Other measures taken were the expansion of compulsory education to neglected rural areas and an improvement in the quality of, and opportunities for, higher education. It was expected that the demand for higher technical

skills would increase. Local physical structures, such as roads, local health care, and rural development projects, were also emphasized during the third Plan.

Because of the package of policy measures adopted by the state during this period, industrial production was increasing at a high rate. Many of these products, particularly textiles, were mainly for local consumption. However, the industrialization of Thailand still had a number of barriers to breach.

The first of these was the continuous import both of foreign technologies for local manufacture and of materials, particularly iron-based materials, for industrial products (see Exhibit 2). This led not only to a serious trade deficit but also to a reliance on foreign support for industrial development. The government increased the number of science and technology degree-holders, but most of these were mainly engaged in industrial management, process operation and maintenance, and product control sections. Another problem was the lack of selection in technology, which denied technologists a chance to improve their capabilities in order to progress to the replication and innovation stages of technological development.

During the fifteen-year period, 1966-1980, rice output increased by 19%, but the area under rice cultivation increased by 47%.

Similarly, during the six-year period, 1974-1979, the gross amount of maize produced increased by 50%, while the cultivated area increased by 61%. This undesirable trend occurred at a time when the government was promoting the extensive use of modern production technologies, such as chemical fertilizers, pesticides, improved seed varieties, and improved techniques. The more the government emphasized the use of such technologies, the higher the total cost of production became for farmers[4].

By the fourth National Economic and Social Development Plan (1977-1981), industry was able to produce enough to meet domestic consumption needs. The government had invested considerably in the construction of the basic physical infrastructure for future industrialization. In a policy shift, it now established a policy of exporting industrial products. This also implied a shift of emphasis from agricultural exports to the industrial sector.

The policy, which gave effective economic incentives to entrepreneurs, was successful in yielding higher GDP rates. Yet the government had no concrete policy for developing technology on a self-reliant basis. The country continued importing foreign hardware technologies and iron-based materials for industrial purposes, increasing the trade deficit. Science and technology-trained manpower was still engaged primarily in machine operation and maintenance. But, for the government, technology screening was not important as long as the country benefited from the exported products. In the agricultural sector, although production rose, the problem of the high cost of production was not addressed and farmers suffered.

During the fifth National Economic and Social Development Plan (1982-1986), the government continued its policy of industrial promotion for exports. This policy was reinforced by the discovery of petroleum. The policy for agricultural development also remained the same as in the preceding Plan. Experience with the Plan indicates that the poor structure of science and technology development had not been sufficiently remedied.

Since the first National Economic Development Plan initiated in 1961, the country has followed a consistent policy of purchasing foreign technologies, particularly hard industrial technologies and iron-based materials. The agriculture sector, in contrast, has been able to generate its own indigenous techniques for agriculture. However, some modern production inputs in agriculture have been continually imported. These factors indicate not only a heavy trade deficit but also a lack of interest in developing one's own technology.

The Eighth Plan (1997-2001) was an important turning point in the country's development planning. The plan represented new values and thinking in Thai society that gave importance to participation by all elements of society, and that aimed for 'people centered development,' deploying economics as a tool to help people achieve greater happiness and a better quality of life. The plan switched from a segmented approach to a holistic and integrated approach, in order to create a balance in the development of the economy, society, and environment. However, in the first year of the plan, Thailand experienced a severe economic crisis with great impact on individuals and society, including problems of increased employment and poverty. Restoring economic stability and reducing the impact of the crisis thus became a priority.

The Ninth Plan (2002-2006) adopted the Sufficiency Economy philosophy to guide the development and administration of the country, at the same time as continuing the holistic approach to people-centered development from the Eighth Plan. The plan prioritized solutions to problems arising from the economic crisis in order to build an economy with strong internal foundations and resilience to external changes, while aiming for balanced development with respect to people, society, economy, and environment in order to achieve sustainable development and the well-being of the Thai people. The national economy grew steadily at an average of 5.7 per cent a year. The stability of the economy improved. Poverty fell, while the quality of life of people improved greatly as a result of expansion of health services, better health insurance in both quality and quantity covering a majority of the population, and a decline in drug problems. But the Thai economy remains vulnerable to external instabilities, while problems persist over poverty, income distribution, quality of education, security of life and property, and transparency in government administration. These remain priorities for solution.

During the period of the Tenth Plan (2007-2011) Thailand faces major changes in many contexts that present both opportunities and constraints for national development. Both people and systems must be fully prepared to adapt to future changes and reap benefit by keeping up with globalization and building resilience in all sectors.

Now, Miss Jaidee has also found some policy distortion experience in the Thailand's history as follows.

An Example of Government Policy Distortion on Agriculture

As noted earlier, Thailand is one of the world's major rice exporters, and rice is one of the most important food crops in terms of planted area and value of production. Nevertheless, the government policy on rice production serves as an example of how agriculture has been victimized.

Taxes[5] and subsidies are good indicators, among government policy instruments, to show the direction of policy favor. Directly after WWII, taxes on rice exports accounted for a large portion of the country's fiscal budget. In 1953, they comprised 32% of the government's revenue but declined steadily to 7% by 1969, as other sources of revenue grew in

importance (Panayotou 1989: 68). During the early stages of the authoritarian politics, the priorities of the rice pricing policy was to collect tax revenue and ensure that consumer prices for the urban elite were neither too high nor too volatile. Rice price stabilization involved the imposition of export taxes and quantitative controls at the border, which were adjusted to keep domestic prices below the world price. In the 1980s, a number of studies noted this price stabilization (Ammar and Suthad 1986, Panayotou 1989). Moreover, a range of taxes were imposed to counterbalance the world price fluctuations. For example, a tax known as a "rice premium" was collected by the Ministry of Commerce. This was the heaviest of the export taxes and was usually adjusted in response to global market conditions. Second, the Ministry of Finance collected a separate flat 5% export duty. Third, there was a rice reserve requirement, where exporters were obligated to sell a varying amount of rice to the government below market prices for every ton of rice exported. Collected by the Ministry of Commerce, this device was considered an effective stabilization instrument to subsidize Bangkok's consumers. Finally, all exports were required to be licensed, which assisted the Ministry of Commerce in imposing quotas on exports.

Next, Miss Jaidee also would like to check about the experience of Thailand's financial crisis as well. Therefore, some empirical tests should be on the characteristics of agricultural sector and manufacturing sectors during Thailand's financial crisis.

Agricultural Sector and Manufacturing Sectors during Thailand's Financial Crisis

Overall, according to the real data, Thailand had a high growth rate—above 8 percent annually in the 1990s. This was due to an influx of foreign capital, which occurred through portfolio investment, foreign direct investment, and foreign debt. The balance of payment was a surplus during this time. The high 1990's GDP growth suddenly dropped in 1997, when the economic crisis occurred. The crisis and its causes have been widely discussed and debated by economists (for example, see Krueger A. (2002), Barro R. (2001), Scott D. (2002), Hernandez and Montiel (2001)).

One often cited reason is that the economy's growth was generally too high, a dangerous departure from the steady state. The economic boom, then, was just illusory, a temporary occurrence. This over-heated growth

period can be explained, in part, by examining growth in the individual sectors. As pictured in Exhibit 3 (lower panel), both manufacturing and service sectors made direct contributions to this extra-ordinary growth in GDP, whereas agriculture was the only sector that stayed approximately on the steady-state trend during 1992-1995. In fact, it was lower than the trend during 1995-1999. In this way, agriculture acted as a cushion to slow down the economic over-heating.

The study of individual sectors within the economy helps in this regard. If they covariate positively (i.e., all sectors in the economy fluctuate in the same direction), the seasonal pattern of agriculture is very beneficial and provides key information about the departure from growth fundamentals. If they covariate negatively, the study still provides information on regular shocks that can be anticipated. Exhibit 4 shows the three sectors' activities versus GDP on a quarterly[6] (million baht) basis.

In addition, worth noting is the number of people employed by each sector of production. The service sector led the way, with manufacturing and agriculture coming in second and third, respectively. However, the sector that employs the largest proportion of the labor force market is agriculture. This implies that, in recent years, a large number of people, and the largest proportion of labor force, are still employed in the agricultural sector. This demonstrates the importance of agriculture as a major labor employer in the Thai economy.

Exhibit 5 compares the production output by sector against the amount of labor employed. Since the levels of output in all three sectors are higher, both manufacturing and service overall employ more labor. The agricultural sector, by contrast, employs less workers, due to seasonal patterns. It implies that labor is being pulled from agriculture due to more attractive opportunities in other sectors of the economy. This transition out of agriculture raises the productivity of the remaining labor in agriculture. Thus, a higher productivity in the labor of agriculture is implied.

More on Empirical Findings

This section focuses on discerning the underlying and fundamental trends of the sectoral time series and, as deviations from the trend, the idiosyncratic shocks. For this purpose, Exhibit 6 shows the three sectors' activities versus quarterly GDP in normalized[7] units. Here, the quarterly

data show a unique pattern for agricultural agriculture in comparison to the annual data.

After the detrending[8], Exhibit 7-8 below show that the manufacturing and service sectors move together in the same direction. Notice that, even during the crisis period, 1997-1999, there is still a co-movement between the cyclical components of the manufacturing and service sectors.

These figures emphasize, again, that the agricultural sector is unique and has its own cyclical component. Although the cyclical components of manufacturing and service move together, it is still a challenge to capture their cyclical pattern. This result is expected when the deviation from the growth path is caused by idiosyncratic shocks.

After she already has information on Thailand's experience, national plans and some empirical tests for financial crisis experience. She has got some ideas on the policy direction to advise the government. Last but not least, Miss Jaidee needs to crosscheck with a review for some theoretical backgrounds as well.

Review of Some Theoretical Background

In Two-Sector Growth Model, the relationship between industry and agriculture is given primacy. The history of this approach dates back two centuries. The seminal developments and modern applications are discussed below.

a) Classical Model: David Ricardo, "The Principles of Political Economy and Taxation", 1817. Ricardo's two main assumptions are, first, that all production processes have a tendency towards diminishing returns, and this diminishing is more rapid in agriculture, due to the limited of supply of land. Second, labor surplus in agricultural sector (disguised unemployment) causes an accumulation of capital that is, for Ricardo, a fundamental source of growth. In addition, the diminishing returns to increments of labor and capital, as well as an inelastic supply of land, generate a constraint to the economic growth. However, empirical studies for many developed countries show that technical progress in agriculture actually helps relax the constraints of the inelastic supply of land, which contradicts Ricardo's views as to the growth restriction.

b) Import Substitution Model: R. Prebisch (1950) Prebisch proposed the idea of import substitution. In import substitution, a country develops its consumer good industries, which, normally, are mostly imported, and puts a tax on imports of industrial goods to encourage the development of local industry. The relative price of agricultural product (primary goods) should evolve downwardly so that the resources of LDC shift from agriculture to industry as quickly as possible. In this model, the role of agriculture is intentionally ignored. Moreover, this strategy encourages capital-intensive investments without a consideration of the factor abundance of the country. As a result, it might not be the most appropriate strategy for countries with a labor surplus. Likewise, import substitution in consumer goods has also been criticized as simply nonessential goods production[9].

c) Dual Economy Model (Dynamic Dualism) Fei and Ranis, in "Development of the Labor Supply Economy" (1964), studied two sectors of the economy, the large, stagnant, subsistence agricultural sector and the small-but-growing commercialized industrial sector. They believed in a shift in development from agriculture to industry and a reallocation of the labor force from the agricultural to the industrial sector. In the Fei-Ranis model, a subsistence sector is characterized by disguised unemployment and underemployment; a positive "institutionally determined"[10] wage rate for agricultural labor, which approximates the average productivity of labor in the subsistence sector; a marginal productivity of labor lower than the wage rate; and fixed land inputs. Under these conditions, it is possible to transfer labor from the subsistence sector to the commercial-industrial sector without reducing agricultural output and without increasing the wage rate of the labor supply to the industrial sector during the early stages of development. Their model considered agriculture only as a supporting sector to help the development of the industrial sector. The modernization of the traditional agricultural sector was ignored. In addition, the model has been criticized as being ignorant of the role of market force.

d) Balanced Growth (Neoclassical) Model: Johnston and Mellor, T. Shultz The balanced growth model proposed that agricultural resource owners are efficient and returns can be greatly improved with new agricultural technology and some institutional reform. Therefore, the public resources should be invested in increasing agricultural productivity.

e) Endogenous Growth Model and New Development Model (NDM): Paul M. Romer Permanent changes in conventional government policies have permanent effects on an economy's long-run growth rate. By assuming that public and private investments in human capital generate external economies[11] and productivity improvements offset the natural tendency for diminishing returns, the endogenous growth model seeks to explain the existence of increasing returns to scale and the divergent long-term growth patterns among countries. In Romer's model, the source of technological change is explained endogenously. The model emphasizes human capital accumulation as a key source of growth, instead of exogenous technical innovation. The per capita income level depends on the economy's initial human and physical capital endowments, and human capital's endowments explain the diversity of the growth rates in the world. Other noteworthy authors, within this approach, include Hirschman (1958), Baldwin (1966), and Lewis (1954). They were the first modern economists to emphasize the importance of the agricultural sector. In particular, W. Arthur Lewis was a pioneer of the modern version of the two-sector labor-surplus model. Like Ricardo before him, Lewis concentrated on the implication of surplus labor for the distribution of income.

Moreover, there is Economic Modeling. In response to the fact that there are too many parameters in most macro models, computable general equilibrium (CGE) has been developed to estimate them in a disaggregated model environment. In CGE, modelers apply econometrics and national income accounting identity to obtain an average measure of a parameter of interest. The simulations are confined to macroeconomic variables and the comparisons are between variances and co-variances. Static equilibrium analysis was developed to calculate the impact of various economic policies, as seen in the early work of Harberger (1962, 1964).

Such analyses, at the time, were generally limited to a few sectors, until the advent of the more complicated CGE models in the early 1970s. The more complicated models include many sectors or more sophisticated policy analysis. Historically, aggregate economic growth analysis can be traced back to the work of early theorists such as Ramsey (1928), Solow (1956), and Koopmans (1965). Dynamic extensions of CGE models are developed.

Closing Section

Many important dimensions of change at the global level will affect Thailand greatly as both opportunities and constraints for development. The five major trends of such change are economic groupings and changes in global financial markets, leapfrog advances in technologies, social changes, movement of peoples, changes in the environment and natural resources. Meanwhile, some scholars commented that the government's policy statement still failed to enhance Thailand's industrial and agricultural competitiveness, which is a primary selling point of the country.

After all, as an economic advisor to the government, Miss Jaidee Ruksa-ngob receives an assignment on the issue of economic sectors strengthening. She needs to study the importance of each economic sector; mainly, manufacturing and agricultural sectors, and link them to the economic theory and some development in national plans, then advises to the government for the policy direction. She starts with agriculture and manufacturing development interrelations, and then the fact that Thailand has been developed by several decades of national development plans. Miss Jaidee has also found some policy distortion experience in the Thailand's history and some empirical tests on the characteristics of agricultural sector and manufacturing sectors during Thailand's financial crisis. Last but not least, Miss Jaidee has already crosschecked with a review for some theoretical backgrounds as well.

Now, she plans to study more in details about the growth model and to help more understanding the Thai economic situation and level of development and has some more testing on some empirical data. Coming in her mind, some alternatives on setting policy measures/directions are:

First direction: guidelines for major investment following the development strategies so that development partners may implement within their area of responsibility, and draw on cooperation from various sectors.

Second direction: under the concept of the reform of the structure of the economy, agricultural and manufacturing sectors need to re-evaluate the policy measures and revise to meet their productivity and avoid any other financial crises in the future.

Third direction: reduction of the capital cost of transport and logistics, investments to ensure equitable access to basic services, and energy security. These are some basic needs for developing all economic sectors.

Fourth direction: under the development of biodiversity and maintenance of the resource base and environment, emphasis will be placed on development of geographical information systems, development of water sources, prevention and alleviation of natural disasters.

Fifth direction: devise indicators of development outcome and systems for monitoring and evaluation of government administration will be upgraded and extended to assess implementation. This helps for early warning and measure the performance of each economic sector as time passes by.

What do you think about her ideas for policy directions, any more suggestions to Miss Jaidee for Thailand's government policy advice?

Exhibit 1: Changes during National Development Plans (Percentages)

Development Sector	1961	1985	% Change
Population			
Urban (%)	12.5 (1960)[a]	18.2 (1982)	+5 7[b]
Rural (%)	87.5 (1960)	81.8 (1982)	-5.7
Education			
People with basic education (%)	51.3 (1960)	82.4 (1980)	+ 31.1
People with higher education (%)	0.6 (1960)	2.3 (1980)	+ 1.7
Economy			
GNP at 1972 prices (millions of baht)		309,122 (1982)	
Per capita GNP at 1972 prices (baht)		6,375 (1982)	
GINI coefficient	0.5627 (1963)	0.6079 (1981)	4.52
Trade balance (market prices, in millions of baht)	-290 (1961)	- 69,984 (1984)	
Infrastructure			
Roads (km) (1983)		33,148	
Railways (km) (1983)		3,735	
Airways in distance flown (km) (1983)		54,644,936	
Schools (no. per capita) (%)	0.1(1961)	0.15(1981)	+0.1
Land resources			
Agricultural area (%)	21.29 (1961)	45.83 (1984)	+24.54
Forest area (%)	53.33 (1959)	30.55 (1982)	- 22.78

[a] Figure in parentheses refers to year the data were obtained.

[b] + means a quantitative increment only, not an improved quality.

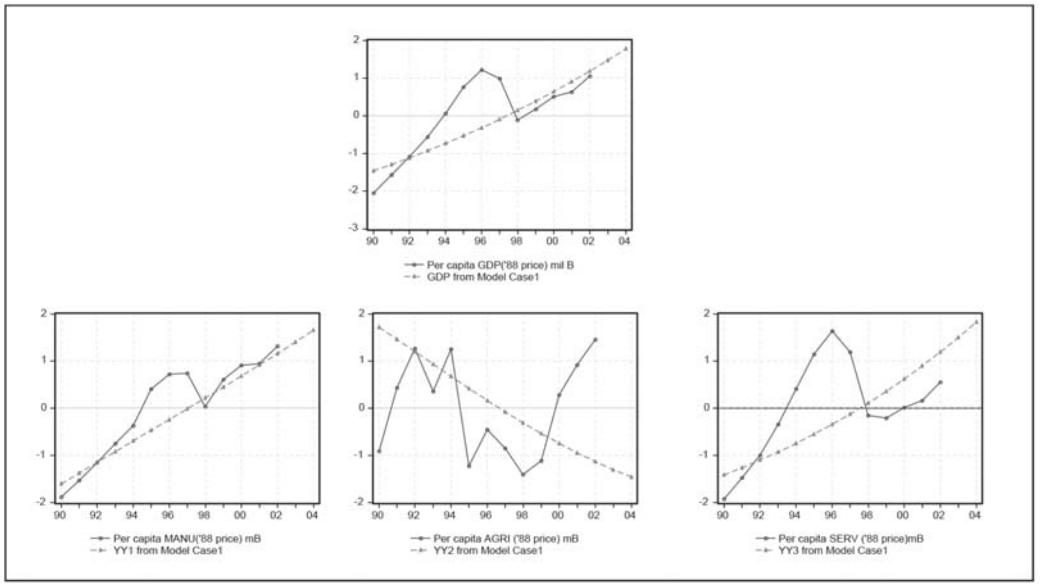
Source: the United Nations Database.

Exhibit 2: Expenses for Imported Steel and Steel-based Products (Millions of Baht)

Year	Non-electrical Items for Industry	Machinery and Parts for Agriculture	Tractors	Iron/ Steel	Other Metals
1957	567	12	54	467	86
1962	1,232	19	133	479	147
1967	2,875	33	655	1,231	422
1972	4,706	36	345	2,046	1,043
1977	10,424	106	2,062	6,352	3,454
1982	19,329	164	1,679	11,323	5,811
1984	32,979	192	1,821	14,035	7,339

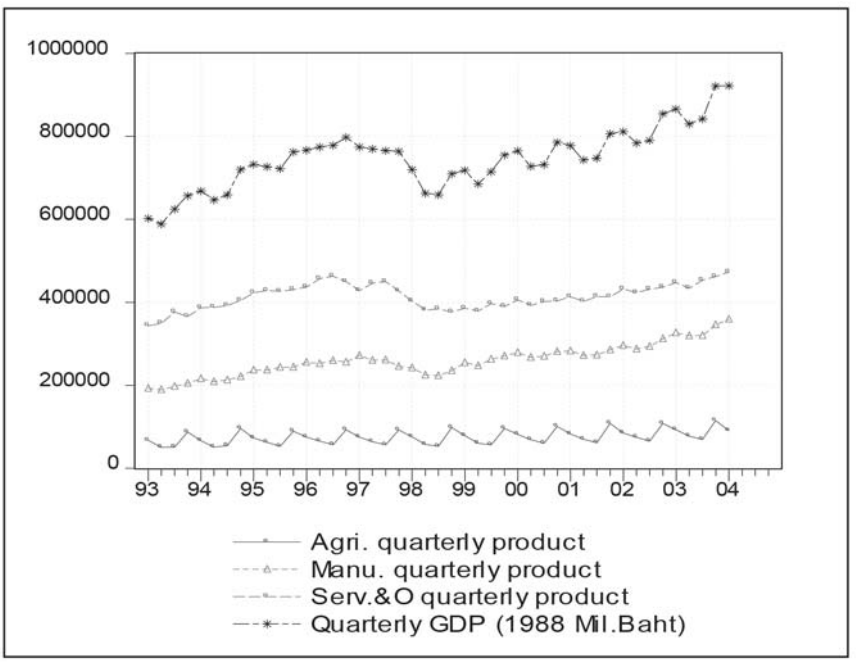
Source: the United Nations Database.

Exhibit 3: Real GDP VS Model (Billion 1988 Baht)



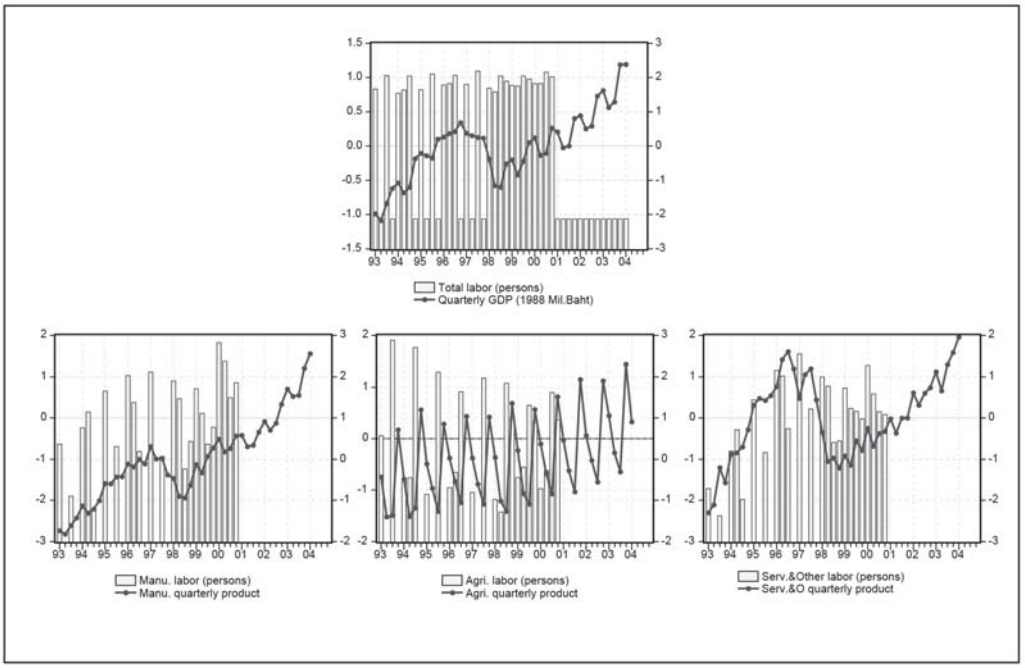
Source: author's calculation.

Exhibit 4: Three Sectors' Activities Versus GDP on a Quarterly Basis



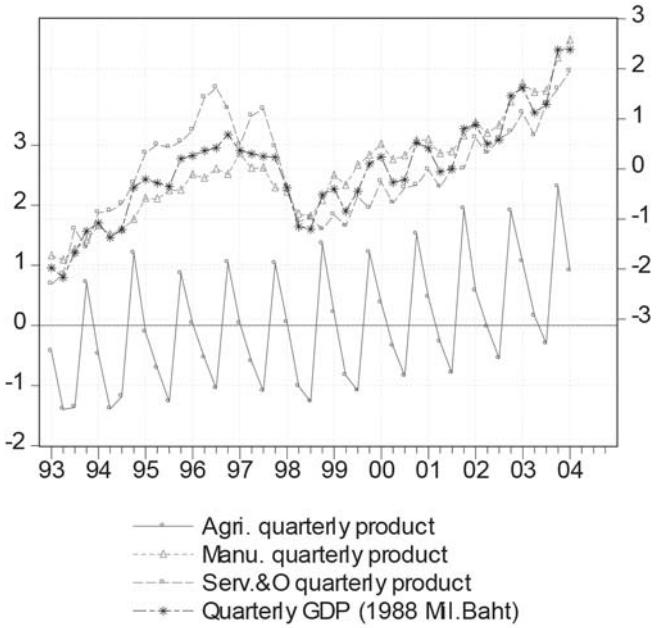
Source: author's calculation.

Exhibit 5: Number of Labor Employed vs. The Production of Each Sector



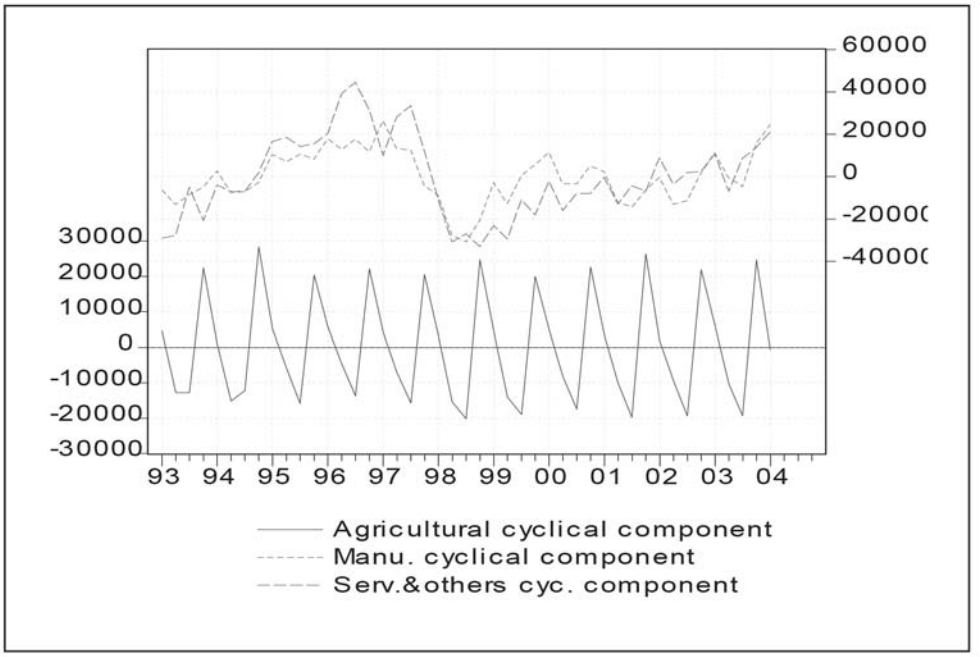
Source: author's calculation.

Exhibit 6: Three Sectors' Activities Versus Quarterly GDP in Normalized Units



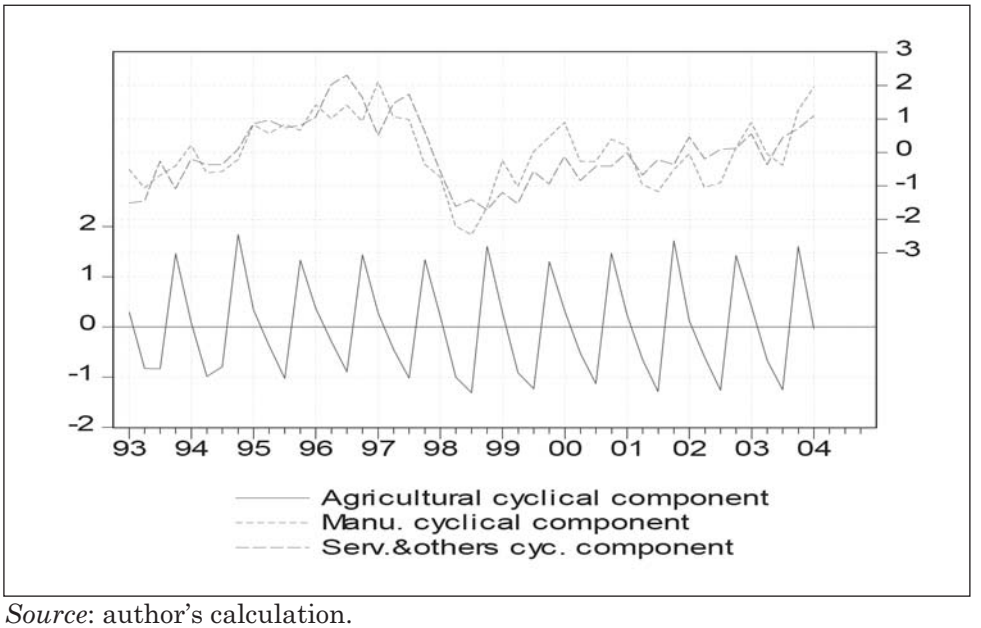
Source: author's calculation.

Exhibit 7: Presents the Cyclical Components of All Economic Sectors



Source: author's calculation.

Exhibit 8: Presents the Information of Exhibit 7 with a Normalized Scale



Source: author's calculation.

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Endnotes

[1] Still, in 2000s, around 55% of the labor force of Thailand was engaged in agriculture, with only 14% in manufacturing. The large agricultural sector makes labor market data less relevant from a macroeconomic perspective than corresponding data in industrialized countries.

[2] The growth of the economy has also led to an increase in the standard of living of the average Thai. Average per capita income has risen from about 4,000 baht in 1970 to 53,215 baht in 1993 (25 baht = 1 U.S. dollar). In addition, the number of Thais living in poverty has been halved since the early 1960s.

[3] The content of this part refers to the United Nations Database.

[4] However, government believes that this increment in the total cost and also average cost will happen in the short-run, and will gradually be better in the long-run when comparing the higher benefit from such technologies. Nevertheless, some critiques are that how long is considered to be the so called "short-run" and "long-run". Also, the benefit should be higher than the cost occurs, at every marginal unit (when including the benefit in the future and calculating it back to the present value) to make sense employing this technology. If this is still something in the far future, then nobody will be certain about this total benefit. Hence, it is subjected to expectation. Farmers were motivated by the government's campaigns providing some motivations such as the production loan and so on for the groups who use modern technologies, for instance.

[5] Here, taxes were levied when the economy was in the fixed exchange rate regime. Hence, the over-valued or under-valued currency may be embodied in the relative price value. Note that this currency effect would occur to all across traded sectors in the country, and should not have a specific effect on some particular traded sectors.

[6] The first year of quarterly data available is 1993.

[7] As a deviation around its mean.

[8] Refer to Chinprateep, A. Other possible detrending procedures include: census x-11 methods, exponential smoothing, double smoothing, and Holt-Winters. There are, recently, other techniques (e.g., band-pass filter) have been used to give a result for comparison.

[9] As mentioned in a lot of leading literatures, "infant" industry has still never grown up over time. The government needs to have many measures to distort the market by pampering some specific, unfruitful industries. It is, hence, considered a inefficient allocation of resources. One might refer to the "New Trade Theory".

[10] The institutional forces (not market forces) determine the agricultural wages.

[11] Externalities as a source of market failure: external economy and external diseconomy happen if the externalities are beneficial or detrimental, respectively.

[12] Source: Office of the National Economic Social and Development Board