

## CHAPTER 1

### INTRODUCTION

#### 1.1. Economic Development in East Asia

The role of government in the East Asian economic development has been one of the most controversial issues in development economics. Much has been said and written about this topic. Most of the researchers praised the macroeconomic stability established in these economies as well as high savings rates, high rates of human and physical capital accumulation, and the active role of the government in monitoring development. Four countries in East Asia have received the largest portion of the attention: Japan, Korea, Singapore, and Taiwan. Common characteristics of industrial development in these economies, such as the incentives designed for selected firms, provision of public goods, superior infrastructure, education, etc., are emphasized in most of the studies related to industrial development in East Asia. Although it is true that governments in these countries engaged actively in industrial development, there are great diversities among them with regards to the implementation of policies. The goal in Korea, Singapore, and Taiwan was the same, altering the industrial structure for further economic development through interventions in factor and product markets. However, the ways this was realized were diverse.

A critical issue is the extent and quality of government intervention as well as its nature. Many studies have characterized the state in Japan, Taiwan, and Korea as “developmentalist.” They were developmentalist in the sense that they mobilized domestic and, when necessary, foreign resources for the development of the industries that were necessary for economic development. On the other hand, Singapore government, cannot be described as developmentalist, but rather as “pragmatist.” One important aspect of government intervention in Singapore is its bias towards the foreign content in the domestic economy.

Table 1.1. Sectoral Shares in GDP at Current Market Prices in Japan, Korea, Singapore, and Taiwan.

	1960	1970	1975	1980	1985	1990	1995	2000	2005
<i>Japan</i>									
Primary sectors	9.0	5.0	4.5	3.2	2.6	2.1	1.7	2.0	1.6
Industry	43.0	32.9	31.2	31.1	30.4	30.7	29.4	34.6	29.7
Manufacturing	16.5	25.8	22.5	22.0	22.1	21.1	19.1	23.8	21.0
Services	48.0	36.3	41.8	43.7	44.9	46.1	49.8	63.4	68.7
<i>Korea</i>									
Primary sectors	36.9	26.9	24.5	14.2	12.6	8.5	6.2	4.6	3.0
Manufacturing	14.0	20.5	25.3	26.1	29.2	28.8	29.4	31.5	25.3
Industry	15.9	22.4	27.5	37.8	40.9	43.1	43.2	42.7	35.8
Services	47.4	50.7	48.0	48.1	46.5	48.4	50.6	52.7	61.1
<i>Singapore</i>									
Primary sectors	3.4	2.3	1.9	1.1	0.9	0.4	0.2	0.1	0.1
Industry	11.6	20.4	24.1	28.5	23.3	27.1	24.8	26.5	32.2
Manufacturing	19.0	30.3	33.5	36.0	36.0	34.4	33.5	34.3	26.5
Services	77.6	67.4	64.6	62.9	63.1	65.2	66.3	65.6	67.7
<i>Taiwan</i>									
Primary sectors	28.7 <sup>a</sup>	15.5	12.8	7.8	5.9	4.2	2.4	2.1	1.7
Industry	29.5 <sup>a</sup>	41.3	45.9	51.4	50.1	41.2	37.5	32.3	25.0
Manufacturing	22.3 <sup>a</sup>	29.2	30.9	36.0	37.6	33.3	27.9	26.3	21.9
Services	41.8 <sup>a</sup>	41.2	41.3	43.0	44.0	54.6	60.1	65.6	73.3

<sup>a</sup> These data are for the year 1961.

Sources: ADB *Key Indicators* (various years), DGBAS (2001), IMF *International Financial Statistics* (various years), Li (1988), and World Bank *World Development Report* (various years).

Table 1.1 shows that the sectoral structure of output has changed considerably in Korea, Taiwan, and Singapore from 1960 until the 1990s. The share of primary sectors decreased gradually while the share of industry (i.e., manufacturing, mining, and energy), especially the manufacturing sector, increased remarkably within two decades. This happened at a time when Japanese sectoral structure of output reached maturity in the 1970s and when Hong Kong started to deindustrialize (see Table 1.2). During this transformation, these countries were implementing what we call today

Table 1.2. Percentage Share of Manufacturing in GDP at Current Market Prices in Asia.

	1960	1970	1975	1980	1985	1990	1995	2000	2005
Korea	14.0	20.5	25.3	26.1	29.2	28.8	29.4	31.5	25.3
Singapore	19.0	30.3	33.5	36.0	36.0	34.4	33.5	34.3	26.5
Taiwan	22.3	29.2	30.9	36.0	37.6	33.3	27.9	26.3	21.9
Hong Kong	30.0	27.4	21.5	21.9	22.1	17.6	8.3	5.1	3.3
Indonesia	8.3	8.8	8.9	11.6	16.4	20.7	24.1	26.0	30.5
Malaysia	6.3	12.7	17.5	9.4	19.8	24.2	26.4	34.3	30.5
Thailand	13.0	16.2	18.1	24.2	21.9	27.2	28.4	33.4	39.1

*Sources:* ADB Key Indicators (various years), IMF International Financial Statistics (various years), Li (1988); for Taiwan: *Quarterly National Income Statistics in Taiwan Area, the Republic of China*, Directorate General of Budget, Accounting and Statistics, Executive Yuan, Republic of China.

“industrial policies.” The recent upwards surge of the share of services in these countries can be attributed to the maturity achieved. In Korea, the decline in the share of agriculture has been accompanied with an increase in the share of industry above 40 percent of GDP. These data are enough to see that the East Asian economies realized a remarkable industrial progress.

The experiences of the East Asian latecomer countries were later replicated by a new generation of latecomers in Southeast Asia, i.e., Indonesia, Thailand, and Malaysia (Table 1.2). This new industrialization current started two decades after the start of the first one in Taiwan, Singapore, and Korea, but its motives and policy instruments were different. While first-generation latecomers industrialized in an era that tolerated protectionism for developing countries in trade, the second-generation latecomers did not face such a favorable global trading system. Instead they benefited largely from massive amounts of foreign direct investment that relocated to these countries to exploit low wages. Foreign investment flew into these countries mainly for exporting.

## 1.2. The Role of Government in East Asia

Rapid economic development of Japan, succeeded with a delay by the newly industrializing economies (NIEs) of East Asia (Korea, Singapore,

and Taiwan), also called the “late-industrializing economies,” or “Asian latecomers” in short, attracted the attention of many researchers. The NIEs recorded very high growth rates with rapid industrialization within three decades starting from the early 1960s. Rapid industrialization was made possible by industrial policies of the governments that were designed to change the industrial structure away from primary economic activities (e.g., agriculture and textiles manufacturing) towards advanced industries that ensure further growth of the economy with an ultimate aim of enhancing the welfare of the nation. This required a shift of available productive resources for this purpose. As a result, the three resource-poor latecomers of Asia (Korea, Singapore, and Taiwan) realized rapid changes in the industrial composition of production away from traditional light industries (e.g., textiles and food) toward heavy and chemical industries. Thus, the discussion about the concept of “industrial policy” focuses on the roles of government and market mechanism in industrial development (Amsden, 1989; Wade, 1990, pp. 8–33; Chang, 2000; Pack, 2000).

There are conflicting views about the role of government in industrialization in East Asian experience. Anglo-Saxon economists showed no interest in industrial policies at the beginning because they believed in the supremacy of neoclassical prescriptions (Itoh *et al.*, 1988). But industrial policies were already being discussed by Japanese economists in the 1960s and 1970s. Western economists recognized the industrial policies as a new approach towards economic development in the late 1970s and early 1980s.

The pros and cons of industrial policies can be categorized into three groups. At the beginning, mainstream economists portrayed industrial policies of the NIEs as a new perspective on development placing them in between central planning and the free market economy. They argued that planners cannot fully acquire information required for efficient resource allocation and the market mechanism can do this efficiently. These so-called “neoclassical” economists place the market at the center and confine the role of government to maintaining macroeconomic stability, provision of infrastructure and public goods, improving the institutions in markets to enhance development, and redistributing generated wealth (Krueger, 1980). In the neoclassical view, resource allocation is performed by the market itself. The comparative advantage of a country is determined by resource endowments of the country and resource allocation is based on this, i.e., resources are

shifted to the sectors that produce the goods for which the country holds comparative advantages. Finally, the proponents of the neoclassical view suggest that free trade leads to efficient allocation of resources. This is because free trade determines the relative prices of traded goods. In short, according to the neoclassicals, market forces, not government intervention, lead to efficient resource allocation based on price signals.

At the other extreme, there are arguments emphasizing the role of government and market failures. The neoclassicals claim that market provides a mechanism for coordination of economic activities and they see market failures as an exception. Counter arguments, on the other hand, stress the role of government in correcting market failures in coordination. One such argument is the so-called “developmental state” (Johnson, 1982). The proponents of this argument point out the importance of a centralized state in institution-building to facilitate further growth. However, as Wade (1990, p. 26) argues, these arguments are descriptive rather than analytic and say little about industrial policies and their impact on industrial development. It is rather those arguments by the so-called “Revisionists” that offered the theoretical underpinnings for the evaluation of the role of government in industrial development (e.g., Amsden, 1989; Wade, 1990, 1992). The revisionists argue that the main reasons for success of industrial policies in the East Asian economies are productive investments that made up a large portion (as large as 40–50 percent) of GDP and high degree of export orientation. They argue that such high investment levels could not be achieved without government intervention. The distribution of incentives and subsidies was used as an effective tool for resource allocation. To put differently, resource allocation was not left to the market but was rather controlled by the central governing body. In fact, these governments were generally of authoritarian nature. However, although they established public firms to engage in production activities, they relied primarily on private firms for the success of their industrial policies and did not systematically aim at substituting private firms by public companies.

Furthermore, some empirical studies emphasize the irrelevance of the neoclassical comparative advantage theory and stress that technology transfer, learning, and government entrepreneurship were important factors behind the success of industrial policies (Amsden, 1989; Wade, 1990). They argue that Asian latecomers created comparative advantages via extensive

government intervention in industrialization. This means that the industries whose development was deemed necessary for industrialization (e.g., steel, chemicals, machinery, oil refining, and shipbuilding) were nurtured by governments. This is because these industries required large-scale investments and the governments acknowledged that private firms could not afford such a big drive and took the initiative. At their infant stages, these industries were protected by the government and by the time they achieved competitive position, they were opened up to international competition.

In between these two extremes, there are other arguments which try to incorporate these two extremes in search for a mid-way explanation. Two of these are the “market-friendly approach” developed by the World Bank (1993) and the “market-enhancing approach” developed by Aoki (1998). The former tries to compromise neoclassical arguments with the revisionists’ findings. The fact that government intervention cannot be ignored led the World Bank report (*East Asia Miracle*) in 1993 to conclude that the rapid industrialization in East Asian countries was facilitated by industrial policies. But the World Bank’s study emphasizes the “market-friendliness” of governments rather than extensive use of the government to manipulate national comparative advantages. Market-enhancing approach, on the other hand, points to complementarities between government and private firms in economic activities and the role of government in coordination.

All these arguments try to explain the sources of rapid growth from different perspectives. All but the neoclassical one emphasize the positive role of the governments’ industrial policies during the early stages of development. In Chapter 2, the concept of industrial policy will be explained under the light of the experiences of Japan, Korea, Singapore, and Taiwan.

### **1.3. Objectives and Methodology**

This book analyzes the effects of industrial policies in Japan, Korea, Singapore, and Taiwan on productivity, sectoral resource allocation, economic growth, and welfare. For this purpose two quantitative techniques are used, a supply-side partial equilibrium analysis of productivity and a computable general equilibrium (CGE) analysis.

The first tool used is the translog production function to estimate total factor productivity (TFP) growth. The translog production approach follows

the conventional growth accounting method where TFP growth is computed as a residual by deducting the weighted growth rates of production factors from real output growth. It integrates qualitative changes in production factors into productivity estimation. As a result, the resulting residual is free of improvements in factor quality and is a better measure for disembodied technical change although it includes various other factors as well. TFP growth is then decomposed into intra-industry productivity growth and resource reallocation components. While the former relates to TFP growth resulting from within individual industries, the latter refers to the effect of intersectoral reallocations of capital and labor on aggregate TFP growth. The effects of the changes in the industrial composition of factors stimulated by industrial policies can be captured by the second component. In addition to TFP growth, a similar analysis for labor productivity is also conducted to examine the impact of the reallocation of labor across industries.

The second tool is a Walrasian applied CGE model. The results from two existing models for Japan and Korea are used. For Singapore, however, a model had to be built. For this purpose, first, a social accounting matrix (SAM) for the year 1995 is prepared. Then, a CGE model for the Singapore economy is constructed. The CGE model incorporates the macroeconomic structure of the economy with individual transactions of economic actors, i.e., government, households, enterprises, and the rest of the world. Unlike the partial equilibrium analyses where only the supply-side is considered, the CGE model combines both supply- and demand-side of the economy. The functional forms of the relations between economic actors and production and consumption decisions of producers and consumers capture the effects of certain policy changes on the economy through linkages within domestic agents in the economy and between the domestic economy and the rest of the world. The CGE model also exhibits some country-specific features of the Singapore economy: (i) imports and domestic goods are imperfect substitutes; (ii) the dependency on imports are very high especially for inputs; (iii) total trade accounts for more than twice the gross domestic product (GDP); (iv) government owns capital and earns profit from its investments, both domestic and abroad; and (v) all goods and services are treated as tradables. The model follows the standard neo-classical class of CGE models as presented in Dervis *et al.* (1982).

The CGE model, which is designed as a multi-sector dynamic model, quantifies the effects of internal and external macroeconomic shocks and major changes in policies on the economy as well as individual sectors. The effects of these shocks on the economy are analyzed via policy experiments.

Much has been written about the role of industrial policies in East Asia. In light of the existing literature, it is expected to find from empirical analyses that the industrial policies are expected to have a favorable impact on aggregate productivity and economic growth as well as national welfare. The analyses in this book address this important issue using quantitative methods.

#### **1.4. Organization of the Book**

The remainder of the book is organized as follows: Chapter 2 presents an overview of the concept of industrial policies in East Asia with experiences of Japan, Korea, Singapore, and Taiwan. The theoretical underpinnings of the industrial policy concept are discussed in detail. Chapter 3 sketches the industrial policies of Singapore in an historical context. The recent changes in industrial policies are especially distinguished. The differences and similarities between the industrial policies of Singapore and other three East Asian countries (Japan, Korea, and Taiwan) are discussed in Chapter 4.

Chapters 5 through 7 analyze productivity growth and its sources and draw policy implications from them. Chapter 5 investigates labor productivity and the impact of inter-sectoral reallocations of labor on aggregate labor productivity growth. Chapter 6 computes aggregate and industry-level TFP growth rates and then analyzes the impacts of the inter-sectoral reallocations of labor and capital on TFP growth. Productivity analyses are also enriched in Chapter 7 with international comparisons of Singapore with the other East Asian economies and developing countries of other parts of the world.

CGE analyses are presented in Chapters 8 and 9. Chapter 8 constructs the Singapore CGE model and presents its mathematical formulations. Policy simulation experiments are presented in Chapter 9. In addition, Chapter 9 also outlines the policy simulations with regard to industrial policies in Japan and Korea. Finally, Chapter 10 concludes with final remarks and policy discussions.