

# Handbook on the Northeast and Southeast Asian Economies

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## 3 Taiwan

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### **A short political history**

#### *Pre-Japanese colonial era*

Taiwan was inhabited mainly by aborigines when the Western merchants began to explore this area in the seventeenth century. The Dutch occupied it from 1624–62, for conducting entrepot trade, and were driven out by the Ming loyalist Cheng Ch'eng-kung. Cheng's rule ended in 1683 when his grandson surrendered to the Manchu (Ch'ing) ruler. Though the Ch'ing tried to discourage migration to Taiwan, many Chinese, mainly from Fukien province, migrated to Taiwan and reproduced the traditional mode of agricultural production. By the early nineteenth century, the Chinese population on the island exceeded two million. However, the land-to-population ratio was higher than that of the mainland, and output per capita was hence greater. The economy was quite commercialized from the early days, exporting sugar and rice to the mainland in exchange for textiles, ceramics and sundries. Before the Opium War, the trade was in Chinese hands. Afterward, several treaty ports were opened up in Taiwan, and foreign merchants came in and took over most of the trade. Trade volume increased, especially tea exports to the West. Agricultural commercialization led to the decline of the absentee landlordism and the strengthening of the tenant–landlord system. Thus the land tenure system came close to the semi-modern sharecropping system.

In the late nineteenth century, not long before Taiwan was ceded to Japan in 1895, the Ch'ing dynasty, in response to the pressing external threat, belatedly began to take a more active role in developing the island, and elevated its status from a prefecture of Fukien to a province. One of the enlightened officials, Liu Ming-chuan, governed Taiwan during 1884–91, and he initiated many ambitious modernizing projects, including the construction of a north–south railroad, a cadastral survey and other infrastructure projects. Liu was unable to accomplish much during this brief tenure, and these projects were subsequently completed by the Japanese colonialists.

#### *Japanese colonialism, 1895–1945*

A rising modern Japan after the Meiji Reformation defeated Ch'ing China in 1895, and demanded the secession of Taiwan as part of the war payment. Emulating Western imperialism was the goal of the Meiji reformers, and the Chinese market was the major target. Occupying Taiwan and then Korea was part of the big plan of expanding into China. Japan set out to impose colonial modernity forcefully upon the colonies in order to prove that they had the capability to manage colonies and hence were on a par with the Western imperialists.

Soon after taking over Taiwan, the Japanese colonial government undertook cadastral land surveys, and established land property rights. Taiwan was designated as the colony to supply sugar and rice to Japan. The Japanese did not alter the land tenure system however, and the family farm and peasants produced sugar and rice. As for sugar, the modern large-scale Japanese sugar companies handled the refining and exports to Japan,

and sugar refining became the main modern industry in Taiwan. With preferential access, sugar from Taiwan came to occupy 50 per cent and 85 per cent of the Japanese market in 1918 and 1939 respectively.

The colonial government began to promote rice exports to Japan after World War I. Due to prior commercial experiences, the landlords in Taiwan were responsive to the export opportunities. The local rice merchants handled the rice processing, while the Japanese capital monopolized the export trade and obtained most of the profits. During those years, Taiwan maintained a persistent export surplus of around 20 per cent with Japan. Taiwan's agricultural productivity grew while exporting rice to the Japanese market from the 1920s.

The Japanese did not plan to industrialize Taiwan, and therefore in 1939 over 90 per cent of Taiwan's exports were of primary goods. The industrialization after 1937 was war-related and meant to support Japanese military activities in the South Pacific. Major industrial plants included a petroleum refinery, chemicals, power plants, aluminium, fertilizer, salt and machinery. They were all owned and managed by the Japanese. Overall, more than 70 per cent of all bureaucrats and technicians then in Taiwan were Japanese, who left for Japan when the War ended in 1945.

During the colonial period, Taiwan's agricultural sector was transformed. The method of production was modernized, using modern inputs and improved technology. The sector also became highly commercialized, exporting a high per centage of output, mainly rice and sugar, to the protected Japanese market. On the other hand, industrialization was limited, confined mostly to sugar refining, and undertaken mostly by the Japanese firms. Rapid industrial development would be a post-war phenomenon.<sup>1</sup>

#### *The rule of the Nationalist government since 1945*

Many events occurred in the few years after the Japanese defeat in 1945. The Nationalist government took over Taiwan and the colonial legacy left by the Japanese in 1945. The Japanese export market disappeared overnight, and had to be replaced by the market on the mainland. Though the civil war between the Nationalists and the Communists soon erupted on the mainland, Taiwan was meant to be insulated from the turmoil on the mainland by the separate currency and the monetary system. Nonetheless, the Nationalists eventually took much of the surplus to fight the civil war on the mainland, and spread hyperinflation from the mainland to Taiwan.

The Nationalist government was defeated by the Communists and retreated to Taiwan in 1949. To consolidate Taiwan as their last bastion, the Nationalists immediately implemented rent reduction in 1949, fixing the rent at 37.5 per cent of output, and later implemented the Land-to-the-Tiller land reform programme in 1952.

After the Korean War broke out in 1950, large sums of US aid arrived, along with the Seventh Fleet, and helped to control the inflation, shore up the state-owned enterprises (SOEs), and stabilize the Nationalist rule economically and politically. The bloody suppression of the local uprising in February 1947 and the white-terror purges in the early 1950s also helped to consolidate its rule. The fact that the Japanese colonial government occupied a dominating position in colonial Taiwan allowed the Nationalist government to continue to take the commanding height in Taiwan, not only politically, but also economically and socially. The Cold War and the US support only reinforced its economic dominance and its authoritarian rule.

The defeat of the Nationalist government on the mainland by the Communist-led peasant revolution was inevitable due to the economic disaster of its own making. Its economic failure was partly due to the fact that its bureaucratic capital did not deliver. Chiang Kai-shek did not bring the other powerful cliques, such as the Soongs, who led the failed bureaucratic capital cliques, to Taiwan. After these political purges, Chiang mostly allowed the engineer-technocrats to have autonomy to decide the economic affairs and hence follow a developmental path. Despite retreating to Taiwan, Chiang Kai-shek intended to 'recover' the mainland eventually. Paradoxically this provided the strong political will necessary for supporting the post-war developmental projects. The economic bureaucracy, also a legacy from the mainland period, enjoyed great autonomy in promoting industrialization under an authoritarian rule. As a result, the economy quickly recovered and stabilized in the early 1950s, and began to embark on a route to rapid industrialization, which has continued to the present time. The policy regime switched from import-substitution to export promotion in 1960, and rapid export growth of manufactured goods followed.

The SOEs dominated the industrial sector in the early post-war days, for the major part of the sector consisted of the Japanese industrial enterprises taken over by the Nationalists. However, the Nationalists promoted private enterprises in two significant events early on. From 1950–53, the government helped to set up the textile industry, relying mainly upon private firms. In the Land-to-the-Tiller programme, the compensation given to the landlords partly consisted of shares of the four industrial SOEs. Thus, some of the landlords were transformed into industrial capitalists. Although most of the non-agricultural US aid went to support the large SOEs, especially the utilities and transportation, some part of it was used to promote new manufacturing industries. Many of the projects went to private hands, including the now top conglomerate Formosa Plastic Company. The share of private capital in the manufacturing sector, therefore, increased from 41 per cent in 1954 to 70 per cent in 1966.

To make industrialization possible, the government needed to be able to extract surplus from a very productive agricultural sector. On the one hand, the agricultural sector had made significant gains in productivity during the Japanese colonial period, and continued to do so in the post-war period. On the other hand, the land reform redistributed income in favour of the tenants and hence made the sector better able to bear the heavy fiscal burden.

In the 1970s, the level of US support, which had been crucial for the survival of the Nationalist government in Taiwan, began to lessen, as the US–China relations started to thaw. The US and People's Republic of China (PRC) established diplomatic relations in January 1979, and this inevitably created a legitimacy crisis for the Nationalist regime. At the same time, economic prosperity brought forth a surge of political opposition activities. Chiang Ching-Kuo had begun to take charge before his father, the elder Chiang, died in 1975. He started a process of political reform in the 1970s, in response to the political crisis. Eventually he allowed official opposition to the Nationalist Party in 1986, and lifted martial law one year before his death in 1988.<sup>2</sup>

#### *Democratization, liberalization and globalization since the late 1980s*

Modernization projects had long been the objective pursued by the elite technocrats, and had been in progress throughout the post-war period. Thus, liberalization and transformation of the post-war mercantilist system had also been in the plan. Nonetheless, political and economic reforms were slow. The Plaza Accord in 1985 forced the New Taiwan dollar

to appreciate in 1986, and set in motion the inevitable economic upgrading process. Liberalization of trade, the foreign exchange regime and the domestic market ensued, as did privatization of SOEs.

Politically, the death of Chiang Ching-Kuo in 1988 marked the end of an era, although he himself helped to set the political change in motion. Social movements soon swept the island, and political transition toward democracy went into high gear. The ensuing decade saw constitutional reforms, electoral changes, the development of political parties and the transformation of the Nationalist Party. It seems that Taiwan has successfully evolved into a democracy.

The rise and opening up of the PRC economy across the strait have critical implications for Taiwan's future. China has always insisted that Taiwan should be part of China, a stance supposedly to be defended even at the cost of confronting the United States militarily. On the other hand, Taiwan's main supporter, the United States has wavered on whether to treat China as a partner or a foe, and hence on its attitude toward Taiwan. For Taiwan, the extent of economic integration with the mainland increased precipitously in the 1990s. At the same time, a pro-independence or nation-building (a Taiwan state) political movement gathered momentum and began to dominate Taiwan's post-liberalization politics, creating high tension across the strait. The Nationalist Party itself has split due to internal divisions over this issue, and hence was voted out of office for the first time in 2000. However, the society remains divided on how to handle its political relations with mainland China, while the economic ties continue to deepen.<sup>3</sup>

### **Economic progress and structural change**

The speed at which Taiwan industrialized its economy has been one of the fastest among the latecomers in the post-war period. It essentially transformed itself from an agricultural economy to an industrialized one within a very short period of time. Along with fast growth, structural change has been swift, but full of imbalance.

According to Maddison (2001), Taiwan's per capita income in 1950 was only \$936 (see Table 3.1), measured in 1990 international dollars (PPP), which was far lower than that of not only Latin America but also the Philippines, and less than one-tenth of that of the United States. By 1998, by Maddison's estimates, Taiwan's per capita income increased 16 times, while Latin America's rose only 2.3 times. According to the US government's estimates, Taiwan ranked thirty-fourth in the world in terms of per capita PPP GDP in 2004, right after the OECD countries, Hong Kong and Singapore, and nineteenth in the world in terms of the size of GDP.<sup>4</sup>

Taiwan's industrial prowess operates mostly behind the scenes, because its leading firms are mostly subcontractors for firms in the advanced countries. In recent years, due to successful industrial upgrading, Taiwan has become one of the world's largest producers of information technology (IT) products, semiconductors, liquid crystal display units, and artificial fibres. The government's Industrial Development Bureau lists 18 products in which Taiwan's output ranked top in the world in 2003. The list includes 14 IT and electronics products, such as notebook computers (64 per cent of global share) and motherboards (79 per cent), as well as bicycles and plastics.<sup>5</sup>

As Taiwan's economy approaches maturity, economic growth has been slowing in the last couple of decades. At the height of post-war growth, in the 1960s and 1970s, the overall annual growth rate averaged close to 10 per cent. Since the new century began,

Table 3.1 Growth of per capita GDP (1990 international PPP \$)

	1950	1998	Growth Factor, 1950/1998
Western Europe	5 013	18 742	3.7
United States	9 561	27 331	2.9
Japan	1 926	20 410	10.6
Latin America	2 554	5 795	2.3
Eastern Europe & former USSR	2 601	4 354	1.7
Africa	852	1 368	1.6
East Asia (excluding Japan)	661	3 535	5.3
Singapore	2 219	22 643	10.2
Hong Kong	2 218	20 193	9.1
Taiwan	936	15 012	16.0
South Korea	770	12 152	15.8
Mainland China	439	3 117	7.1
Philippines	1 070	2 268	2.1

Source: Maddison (2001).

growth has slowed significantly and averaged only 2.6 per cent from 2001 to 2004, signalling the arrival of a different stage of development (see Table 3.2). The year 2001 was also the first and only year in the post-war period when the economic growth rate was negative.

Industrial production has been the driving force right from the beginning of the post-war period. The share of agricultural production in GDP decreased from 38 per cent in 1953 to 28.5 per cent in 1960, to 15.5 per cent in 1970 (see Table 3.3) and to below 10 per cent after 1978, while the share of manufacturing in GDP increased from 12.9 per cent in 1952 to 19 per cent in 1960, to 29 per cent in 1970 and reached a peak at 39.4 per cent in 1986. After 1986 the share of manufacturing began to decline and reached 25 per cent by 2004. During the same period after 1986, the share of services began to rise from around 48 per cent in the 1950s to 68 per cent by 2004 (see Table 3.3). The shifting pattern of GDP composition among the primary, secondary and tertiary sectors in Taiwan closely resembles that of the more advanced countries, indicating the steady advancement of Taiwan's economy. The changes in the employment composition run pretty much parallel to those of GDP.<sup>6</sup>

#### *Liberalization and upgrading*

Just when the share of industry in GDP began to decline after 1986, the economy began its enormous transformation. That is, the New Taiwan dollar appreciated 40 per cent against the US dollar, the wage level rose significantly and the government started implementing broad economic liberalization in earnest after 1986.

Before then, Taiwan's economy had been operating under a rather stable export-promotion regime, in which the foreign exchange rate was kept stable and undervalued, and the domestic market was protected. At the same time, overall macroeconomic stability was maintained, with a low inflation rate, except during the oil crisis, and balanced budget and balance of payments surplus. The success of this regime however, brought its own demise, and made overall economic upgrading necessary by the later half of the 1980s. Trade surplus and exchange reserves began to accumulate due to the success of

labour-intensive exports in the 1980s, while the wage rate continued to increase. The imbalance between the progressive export sector and the protected domestic sector left the increasingly wealthy domestic consumers ever more unsatisfied.

As economic liberalization began in a major way after 1986, the major part of labour-intensive production moved overseas. Two kinds of exports took its place. One was the upstream input, the growth of which originally took place via secondary import-substitution. For example, fabrics and artificial fibres became major exports after the downstream apparel production moved out. The share of the textile industry, a leading sector in the earlier period, in the manufacturing industry, declined from 20 per cent in 1971 to 2.3 per cent in 2004. The other major exports came from the newly emerged high-tech industry, which became the major force in exports.

The entry strategy of Taiwanese firms into the high-tech industry has been one of playing second mover or doing subcontracting. Lacking frontier technology, the firms enter when the product becomes mature, and earn profits based upon efficient and low-cost manufacturing and timely delivery. They have to absorb the technology and expand production quickly. These firms have mostly relied upon locally trained engineers, as well as some returnees from abroad. The support of the education system, the accumulated manufacturing experiences and the local production networks provided the necessary conditions for the emergence of these firms. On the other hand, the government's industrial policy helped to set up the right environment and the crucial institutions, and assisted the advancement of the industry along the way. As a result, the main players in Taiwan's IT industry are the large nationally owned firms, not foreign capital, and they have been able to capture a large share of global IT production, and now rank fourth in the world in terms of IT production values, after the United States, Japan and China. Domestically, the share of the IT and electronics sector in total manufacturing rose from around 13 per cent in 1990 to 36 per cent in 2004.

The share of heavy industrial goods in total exports increased from 46 per cent in 1990 to 76.5 per cent in 2003, and the share of high-technology-intensive goods rose from 27 per cent in 1990 to 46 per cent in 2003. The changing product mix of Taiwan's exports from the late 1980s till the present shows that broad-based industrial upgrading indeed has taken place in this round of industrial transformation.<sup>7</sup>

### *Globalization*

The pace of globalization has been swift in Taiwan since the late 1980s. The flow of inward and outward foreign direct investment (FDI) increased significantly. Inward FDI now mostly flows into the modern service sectors, as entry restrictions continued to lessen. By the time Taiwan formally entered the WTO in 2002, the domestic market had already gradually become quite open.

Outward FDI mostly took place from the late 1980s on. The first wave was that of the labour-intensive production moving offshore, first to the ASEAN countries and later to the mainland. In the last few years, the high-tech industry also began to move mass production lines to the mainland. For example, the ratio of overseas production of Taiwan's IT industry increased from 43 per cent in 1998 to 78 per cent in 2003. The high-tech firms are now under intense pressure to upgrade their operations again. At the moment, they tend to undertake mass production on the mainland, and do development work and pilot runs at their Taiwan headquarters. Many of them have also begun to increase marketing efforts in the advanced countries and China.

Table 3.2 *Leading economic indicators I, 1951–2004 (%)*

Year	Growth Rates Of						
	Real GDP	Population	GNP per Capita	Gross Fixed Capital Formation	Industrial Production	Exports	Consumer Price Index
Annual average							
1951–60	8.1	3.6	4.5	14.1	11.9	22.1	9.8
1961–70	9.7	3.1	6.8	15.4	16.5	26.0	3.4
1971–80	9.8	2.0	7.7	13.8	13.8	29.5	11.1
1981–90	8.0	1.4	6.8	6.8	6.2	10.0	3.1
1991–2000	6.4	0.9	5.4	8.5	5.1	10.0	2.6
2001–04	2.6	0.5	2.7	-2.2	4.3	6.5	0.3
1951–2004	8.0	2.1	6.0	10.6	10.4	18.4	5.4

Source: Council for Economic Planning and Development (CEPD), various years, *Taiwan Statistical Data Book*.

Table 3.3 *Leading economic indicators II, 1952–2004*

Year	GDP Per Capita (US\$)	Gross Fixed Capital Formation as a % of GNP*	Exports as a % of GNP*	Trade Balance (US\$ million)	GDP by Industry (%)		
					Agriculture	Industry	Services
1952	196	11.3	8.0	-71	32.2	19.7	48.1
1960	154	16.6	11.5	-133	28.5	26.9	44.6
1965	218	17.0	19.4	-106	23.6	30.2	46.2
1970	389	21.7	30.4	-43	15.5	36.8	47.7
1975	970	31.3	39.9	-643	12.7	39.9	47.4
1980	2 348	30.7	52.6	78	7.7	45.7	46.6
1985	3 243	18.5	53.3	10 624	5.8	46.3	47.9
1990	7 918	21.9	45.6	12 498	4.2	41.2	54.6
1995	12 488	24.6	47.2	8 109	3.5	36.4	60.1
2000	13 912	23.1	53.7	8 310	2.1	32.4	65.5
2004	13 529	19.4	64.3	6 124	1.7	29.6	68.7

Note: \*Before 1960, GDP figure was used.

Sources: CEPD, various years, *Taiwan Statistical Data Book*.

The destination of Taiwan's outward FDI has become increasingly concentrated on mainland China, taking up over 70 per cent of the total outflow. The situation in the export trade is similar. Exports to mainland China now account for over one-third of Taiwan's exports, surpassing that of the US market. In sum, though Taiwan's economy has become increasingly globalized, the external relationship has been dominated by the



cross-strait relation. It is foreseeable that economic dependence on mainland China will only intensify in future, a problem the Taiwan government is yet to come to terms with politically.

### Social progress

Chang (2005) compared the initial conditions of the developing countries at the beginning of the post-war period, to examine whether East Asia was more favourably endowed than others. He found that the conditions really varied among the Asian, African and Latin American countries, and that the only condition in which the East Asians were clearly superior was the social infrastructure, that is, the literacy rate and life expectancy. In this regard, Taiwan had a favourable starting position and has improved on that continuously since then (Table 3.4).

The relevant indicators indeed show good progress. Life expectancy for females and males increased from 60.3 and 57.4 in 1952 to 79.4 and 73.6 in 2004 respectively. The literacy rate increased from 63.6 per cent in 1952 to 97.2 per cent in 2004. Taiwan's income distribution had been relatively equal until recently, if compared with most other developing countries. The ratio of the top fifth's household income to the bottom fifth's was 5.25 in 1966, which fell to 4.17 in 1980, but rose to 5.55 in 2000, and increased sharply to 6.07 in 2003.

Several related policies helped to bring about these beneficial results in the earlier period. Aspects of economic development helped to render income distribution more

Table 3.4 *Social indicators, 1952–2004*

Year	Population (1000 persons) (1)	Labor		Life Expectancy (4)		Infant Mortality (5)	Literacy Rate (%) (6)	Ratio of top Fifth's Income to Bottom Fifth's (7)
		Force Participa- tion rate (%) (2)	Unemp- loyment rate (%) (3)	Male	Female			
1952	8 128	66.5	4.4	57.4	60.3	44.7	63.6	–
1960	10 792	62.4	4.0	62.3	66.4	35.0	78.7	–
1965	12 628	58.2	3.3	65.1	69.7	24.1	81.2	5.25*
1970	14 676	57.4	1.7	66.7	71.6	16.9	87.6	4.58
1975	16 150	58.2	2.4	68.3	73.4	12.6	87.1	4.18**
1980	17 805	58.3	1.2	69.6	74.6	9.8	89.7	4.17
1985	19 258	59.5	2.9	70.8	75.8	6.8	91.5	4.50
1990	20 353	59.2	1.7	71.3	76.8	5.3	93.2	5.18
1995	21 304	58.7	1.8	71.9	77.7	6.4	94.4	5.34
2000	22 216	57.7	3.0	72.7	78.4	5.9	95.6	5.55
2004	22 615	57.7	4.4	73.6	79.4	5.3	97.2	6.07***

Notes: \*1966 data, \*\*1976 data, \*\*\*2003 data.

Sources: (1)–(2), (7) CEPD, various years, *Taiwan Statistical Data Book*. (3) DGBAS, various years, *Statistical Yearbook of the Republic of China*; DGBAS, various years, *Social Indicators of the Republic of China*. (4) Ministry of the Interior, <http://www.moi.gov.tw/stat/>. (5) Department of Health, 1995, 2003, *Health and Vital Statistics*. (6) Ministry of the Interior, <http://www.moi.gov.tw/stat/>; *Statistical Yearbook of Interior of the Republic of China*, 1995, 2002.

equal. First of all, land reform helped to build the basis for social and income equality. Labour-intensive export production provided ample jobs for the young leaving the agricultural sector. Industrial districts had also been quite dispersed and spread jobs widely, until recently when the electronics boom concentrated new high-tech jobs in the north of the island. Implementation of industrial policy relied mostly on SOEs, not on large private firms like *chaebols* in South Korea, hence leaving room for the small and medium-sized enterprises (SMEs).

In sum, export-led growth made income distribution more equal in the 1960s and 1970s. But, in the later period, globalization and industrial concentration in electronics led to increased geographical concentration of employment in the northern part of the island, and a higher skill premium for the better educated, thus a worsening of income distribution.

Education policy emphasized mass education in the early period, vocational education in the later period, and higher education only recently. In the earlier period, the education policy served economic development well, by supplying a large number of good quality unskilled and semi-skilled workers, and ample supply of competent engineers. The higher education system has greatly expanded since the 1990s, with the percentage of senior high school graduates enrolled in schools of higher education increasing from 26.3 per cent in 1952, to 42 per cent in 1970, to 44 per cent in 1990 and to 80 per cent in 2004. Whether this recent change in the education system will help to facilitate Taiwan's next round of economic upgrading remains to be seen, however. The results of educational reforms and the pace of further liberalization and privatization of education in the future have been the subjects of heated debate in recent years.

The media and publishing industry became very active after martial law was lifted in 1987. For example, the number of publishing companies increased from 564 in 1960, to 2011 in 1980 and to 7810 in 2002. Despite industry growth, whether or how much the quality of cultural services provided has improved has also been disputed.

Health policy focused on the public health programme in the early period, emphasizing the control of the spread of communicable diseases and implementation of the birth control programme. With economic progress, the number of health personnel per 10 000 persons increased from 11.4 in 1961 to 77.9 in 2002, and the number of beds per 10 000 persons increased from 3.7 in 1961 to 59.3 in 2002. A universal health care plan was put into effect in 1998, as the major social welfare programme offered in Taiwan to this day.

Even though Taiwan's per capita income has approached the advanced country level, the size of the social welfare programme remains relatively small. The share of government expenditure was only about 22 per cent of GNP in 2003. Besides the universal medical insurance programme, there are few other social welfare programmes to provide the necessary social safety net in a changing society, in which the traditional family has come to provide fewer and fewer supportive functions.

The tax burden has been relatively light and has even been decreasing recently. The ratio of tax revenue to GDP has declined from 19.6 per cent in 1980 to 12.7 per cent in 2003. The budget had been more or less in balance before the late 1980s. Since then, the fiscal deficit has been increasing rapidly; its share in total government revenue has averaged around 20 per cent since the 1990s and shows no signs of improving yet, probably due to the effects of globalization and democratization.

**Major policies**

Taiwan's post-war industrialization has been very much a state-led development. When the Nationalist government took over Taiwan, it had almost all the essential policy tools at its disposal. And the government indeed had used these tools to promote economic growth single-mindedly.<sup>8</sup>

Right from the beginning, industrialization had been the clear objective. In the 1950s, besides trying to restore the economy to its pre-war level, the government promoted import-substitution industrialization due to severe foreign exchange constraints. The government push-started the cotton textile industry, the major target industry, by bearing most of the risks and responsibilities itself. A few other industries were also promoted.

The government had noticed that promoting exports was another way to lessen the foreign exchange constraint. Besides, the scale of the domestic market was obviously too small to allow for the realization of scale economies of the industry and to sustain growth. For example, the textile industry reached self-sufficiency within just a few years and began to accumulate excess capacity. The government then had to design schemes, that is, getting the prices 'wrong', to prod the firms to export.

The switch to export-promotion policy regime, therefore, seemed a logical next step for a government eager to find ways to sustain growth and push industrialization. The Foreign Exchange Reform and the 19-point Programme for Economic and Financial Reform were put into effect in 1958 and 1960 respectively; measures included reforming the foreign exchange regime to adopt a unitary exchange rate, export promotion programmes, and other fiscal reforms. The switch was not as drastic as it seemed, for the extent of trade liberalization was limited and the domestic market continued to be protected to a great extent. But exports indeed began to grow very rapidly. Taiwan's cotton textile products were subject to import restraint in the US market as early as 1962. This occurred before apparel exports began to take off in the late 1960s, showing the beneficial effects of import substitution.

To promote overall economic development, the government enacted the all-important Statute for Encouraging Investment in 1960. The Statute remained in effect till 1990 and replaced by the Statute for Promoting Industrial Upgrading.

The promotion of heavy industry was also in the plan, while light industry only began to grow in the 1950s. The automobile industry made a start in 1956. Plans for the steel and petrochemical industries began to be discussed in the 1950s as well. Due to difficulties in obtaining technology and capital, the first naphtha cracking plant did not begin operation until 1968, and the first integrated steel mill appeared only in 1977. Both were undertaken by SOEs, socializing investment risks then deemed unbearable by the private sector. This was also a form of secondary import-substitution policy, that is, the upstream production was set up with government help to supply inputs to the exporting downstream industries.

Moreover, in response to the first oil crisis and the political crisis caused by the thaw in the US-PRC relations, the Nationalist government pushed the Ten Construction Projects in the 1970s, which included six major infrastructure projects, one nuclear power plant and three industrial projects – the integrated steel mill and expansion of the petrochemical and the ship-building plants. It helped to sustain and deepen industrialization.

Right after the plan for the heavy industry was more or less in place in the late 1960s, the government began to plan the next growth industry – electronics. Adopting a different

policy approach this time, the government set up the National Science Council and public research laboratories, like the Industrial Technology Research Institute (ITRI), in the early 1970s, and started the first IC (integrated circuit) project in 1976. Later, these consecutive IC projects were spun off from ITRI, and the spin-offs, mainly United Microelectronics Corporation in 1980 and Taiwan Semiconductor Manufacturing Company in 1987, now comprise the main part of Taiwan's IC industry.

This policy environment had also supported the spectacular growth of Taiwan's information technology (IT) industry. A policy network was in place to import-substitute key components after local production of mature IT products became possible. Thus, by now, the majority of the world's IT products are made by Taiwanese firms, even though they remain subcontractors without brand names.

In sum, until 1986, except for the high-tech industry, which relies on a different set of policies, the overall industrial policy was export promotion but accompanied by secondary import substitution and protection of the domestic market. Most of the banks were publicly owned, therefore, the government could direct credits to support its industrial policy. Nonetheless, the Nationalist government had been much more restrained in this regard when compared with that of South Korea probably due to historical experiences. The government had also successfully managed to maintain macroeconomic stability throughout the years, by keeping the budget mostly in balance and the inflation rate low. Starting from 1986, Taiwan's economy began its great transformation. Although circumstances made the transformation inevitable, the government still tried to guide the process with developmental intentions.

Broad economic liberalization began in 1986. The Plaza Accord forced the New Taiwan dollar to appreciate from 1986. The foreign exchange and the trade regime both began to be liberalized at that time. Foreign investors and new local entrants were gradually allowed into many previously restricted domestic markets. The transformation of the two major service sectors, the financial and communication sectors, however, was highly regulated to allow learning periods for local firms.

The government continued to push upgrading after economic liberalization, by subsidizing R&D and sponsoring cooperative research, among other measures. There are indications that Taiwan's technological effort has made significant progress.

The flow of outward investment from Taiwan has increased significantly since liberalization from the late 1980s onward. Besides some investment for R&D and marketing in the advanced market, the outflow was mainly for relocating manufacturing to low-cost areas, moving first to Southeast Asia in the early 1990s and then mainly to mainland China. More recently, Taiwan is aiming for more and more outward investment to mainland China for the local market.

All in all, the extent of economic integration with the mainland economy in terms of trade, investment and human resources has become so great that the mainland is already the most important economic partner for Taiwan. For political reasons, the government, both the Nationalists in the 1990s and the current DPP government since 2000, adopted a policy of 'restraint' toward the mainland, forbidding direct links and restricting trade and investment, with the intention of curbing the advancement of economic integration. The policy has not been effective in this globalized world, especially because the Chinese economy has continued to grow rapidly. This is probably the first time in the post-war period that the economic policy has neither been developmental nor forward-looking.

### Prospects

Taiwan has successfully upgraded its economy by moving from mid-tech industries into mature high-tech and modern services in the last couple of decades, as documented by Amsden and Chu (2003). It now faces a new set of challenges as it enters the next round of industrial upgrading.

The electronics sector makes up about 40 per cent of Taiwan's manufacturing value-added and exports, but now faces slower growth and declining profit margins as the global high-tech industry reaches maturity. Many leading firms have diversified into other product lines, including cell phones, hand-held and mostly liquid crystal displays, but problems of low profit margins and excess capacity still prevail. Most firms have also moved mass production lines to mainland China, and have expanded capacity greatly after relocation, exacerbating the excess capacity problem. The ratio of overseas production of IT products has increased quickly from 43 per cent in 1998 to 78 per cent in 2003.

At the firm level, besides seeking new growth areas, these leading firms have to globalize their operations by managing across borders, undertaking R&D at home and abroad, building up brand names, and marketing abroad. At the national level, Taiwan has to find the next growth industry. It has to make sure that the large amount of investment already devoted to the bio-med field is prudently allocated, so that it will bear fruits in the future.

In the meantime, the government's greatest challenge is to find a way to ease political tension across the strait, to allow Taiwanese firms to find growth opportunities on the mainland while upgrading operations at home. The successful industrialization experiences in the past should give the next round of upgrading a good chance to succeed, but only if the political crisis can be solved in time.

Taiwan also needs to address the growing inequality in recent times and the problems associated with an ageing population. Thus, Taiwan has to face the challenge of balancing the need for a broad-based social safety net with the need for fiscal prudence.

### Notes

1. For discussion of the Japanese colonial period, see Cumings (1984); Gold (1981); Ho (1978) and Myers and Peattie (1984).
2. For general discussion of the overall development in the earlier post-war period, see Amsden (1979); Cumings (1984); Gold (1981); Ho (1978); Lin (1973) and Wade (1990).
3. For discussion of the more recent transformation, see Chu (2002).
4. The World Bank's *World Development Indicators 2005*, does not include Taiwan, therefore we need to use estimates from other sources. The US government's estimates are taken from: <http://www.cia.gov/cia/publications/factbook/rankorder/2004rank.html>. It estimates Taiwan's 2004 GDP per head (PPP\$) to be \$25 300, which is close to that of EIU's (Economist Intelligence Unit) estimate of \$24 500 for Taiwan in 2003. The EIU's estimates are taken from <http://www.economist.com/countries>. The ranking adopted here should be consistent with that of the World Bank (2005: Table 1.1), in which Singapore, at \$24 180, ranked thirtieth in 2003.
5. Industrial Development Bureau (2004), *An Introduction to Industries of the Republic of China*, Taipei: IDB, pp. 14–15.
6. See Galenson (1979); Gold (1981); Ho (1978); Lin (1973) and Wade (1990) for discussion on economic growth in the earlier post-war period.
7. See Amsden and Chu (2003) for a discussion of the economic upgrading and globalization in the last two decades.
8. For discussions of major policies, see Amsden (1979); Amsden and Chu (2003); Chu (2001); Gold (1981); Ho (1978); Hsueh, Hsu and Perkins (2001) and Wade (1990).

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### Further reading

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A comprehensive survey of the government's role in Taiwan's economic development.