Transforming Taiwan's Economic Structure in the 20th Century

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This article analyses Taiwan's economic changes that have occurred from the Japanese colonization of Taiwan in 1895 to the recent Asian financial crisis, focusing on the interplay between policy and structure. Pre-colonial Taiwan was a frontier society with a settlement economy, primarily subsistence-based, and with a thin state structure, politically barely governed by the Qing dynasty. Under Japanese rule, Taiwan was turned into an essentially open economy and an agrarian base of the Japanese Empire. In the post-Second World War era, the Taiwanese economy under the Nationalist regime was briefly turned inward for import substitution industrialization, but rapidly transformed into one based on industrial exports in labour-intensive sectors, and increasingly on modern services as well. By the end of the century, Taiwan had already become the world's third largest maker of information technology products, behind the United States and Japan. The permutation of ownership structure was equally drastic. Dominant Japanese capital in the pre-war era became omnipresent state capital in the immediate post-war era. Subsequently, however, indigenous private capital overwhelmed the industrial sector and, towards the end of the century, made inroads in the financial sector as well. All these structural changes in market orientation, sector composition and ownership pattern did not reflect natural evolution, but rather were cumulative results of government policies under three successive regimes in Taiwan, the colonial, the Nationalist authoritarian and the democratic.

Economic policies in colonial Taiwan were predetermined by its assigned role in the Japanese Empire. In the post-war era, the local state elite had more latitude in making policy choices. Policies, imposed or homemade, are effective only if the state can elicit compliance or inspire responses from private economic agents. Throughout the century, Taiwan has had a state capable of leading concerted actions for economic modernization. Autonomous, yet highly penetrative and effective, the colonial state built and staffed by expatriates quickly embarked on agricultural development and turned Taiwan into a taxable surplus base. Upon its retreat from the mainland to Taiwan, the Kuomintang (KMT) regime, as heir to the colonial state structure, reinvented itself, shook off its predatory nature and provided political space for technocrats to implement a series of industrialization strategies. The state in post-war Taiwan has displayed economic leadership as in Korea, but often via a more hands-off, less discretionary approach in fostering entrepreneurship, encouraging investment and shaping industrial structure. This approach to industrial transformation helped Taiwan to cope with the challenge of globalization and endure the recent financial crisis.

This article is organized in the following way. The first section analyses how the colonial state initiated and shaped the course of economic development from 1895 to 1941. The next section discusses regime transition and its impacts on the state–economy relationship. This is followed by an examination of the economic take-off and industrial upgrading from the 1960s on. The final section assesses the Taiwanese developmental model in the light of democratization, globalization and the *fin-de-siècle* region-wide financial crisis. Throughout, Korea serves as a benchmark for comparison as it shared the developmental trajectory.

Colonial Development

As a late imperialist power without much territory to grab, Japan took a high cost and high yield approach to colonizing Taiwan, pursuing extensive programmes for economic growth before exploiting the proceeds.[1] The long arm of the state in the economy, already evident in Japan proper because of late industrialization, was extended to engineer Taiwan's development. Various projects were logically sequenced, each with a distinct rationale, but all conducive to economic expansion.[2] The main tasks for the first colonial decade were transportation and a cadastral survey; the former helped to maintain order and marketize the economy, while the latter boosted tax revenue, clarified property rights and facilitated transactions. The second decade added two new enterprises, periodic census and a natural resource survey. The census monitored labour supply and improved on a pre-existing household registration and mutual monitoring system, while the survey verified public ownership of resources to be licensed to Japanese capitalists. During the third and fourth decades, major irrigation and electrical power systems were installed to enhance agricultural productivity and spark industrialization. The colonial authority absorbed 60 per cent of cost for water control and irrigation systems, which covered two-thirds of the cultivated land by the 1940s.[3]

The colonial administration also expanded education and improved sanitation. The literacy rate increased from 1 per cent in 1905 to 27 per cent in 1940, while the enrolment ratio for elementary schools rose from 8.7 per cent in 1905 to 57.1 per cent in 1935. To promote production and trade, the colonial government also established financial institutions and agricultural parastatals. Banks and credit co-operatives were introduced in the 1900s and quickly spread throughout the rural areas, contributing to

1. Mark Peattie, "Introduction," in Ramon Myers and Mark Peattie (eds.), *The Japanese Colonial Empire* (Princeton: Princeton University Press, 1984).

2. Christopher Howe, *The Origins of Japanese Trade Supremacy* (Chicago: University of Chicago Press, 1996), pp. 344–45; Lin Jong-shiung, "Tai-wan jing-ji fa-zhan de ji chu" ("The foundation of economic development in Taiwan"), in *Taiwan ming-yun de hui-gu yu zhang-wang* (*Taiwan's Destiny: Retrospect and Prospect*) (Taipei: Ji-yu xi-bao, 1996), pp. 102–107.

3. Samuel P. S. Ho, *Economic Development of Taiwan 1860–1970* (New Haven: Yale University Press, 1978), p. 37.

expansion of production, savings mobilization and local commerce.[4] Farmers' associations, irrigation associations and agricultural extension stations helped to introduce new varieties of seed and farming technology. All these efforts were meticulously orchestrated to commercialize the agrarian economy and heighten the incentive to produce. However, the colonial authority did not engage in production and marketing. It instead fostered Japanese capitalists by entrusting the task of development to "private enterprise but with a guaranteed minimum rate of return."[5] Essentially a risk-sharing device for huge and long-term investment, this *shokusan kogyo* formula induced leading *zaibatsu* to become the agents for colonial development and extraction, most notably in the sugar-refining industry. Such intimate government–business relations drew little social criticism and political ire in Taiwan, unlike in Japan proper.

Undertaking so many interlocking development projects required an effective state. The state-building process was, however, quite straightforward. There was no pre-existing state structure to supercede, unlike the case of colonial Korea. The gentry class was small; and indeed some local elite fled to China to escape Japanese rule (later, these returnees helped the KMT regime to reign in Taiwan.) State officials were brought in from Japan, though Taiwanese were later recruited and eventually accounted for 27 per cent of state employees. By the end of colonial era, there were 37,209 government officials, or 5.9 per thousand residents, compared to 3.9 in Korea in 1930.[6] There were also about 40,000 persons working in agricultural parastatals, notably agricultural supporting institutions. The police force was dense as well, one for eight residents in 1943, the corresponding figure for Korea being one for 14.[7] Apart from keeping law and order, the police were involved in mass mobilization for public facilities and even for agricultural extension.

The colonial mode of production made Taiwan an agricultural production base and a market for industrial goods of the Japanese Empire. Barely a decade after the Japanese takeover, rice and sugar replaced tea and camphor oil as Taiwan's leading export items, accounting for about 70 per cent of its total exports till the eve of the Second World War.[8] Nearly all exports went to Japan, while major imports – fertilizer, textile

4. *Ibid*. p. 66; Tun-jen Cheng, "Guarding the commanding heights: the state as banker in Taiwan," in S. Haggard, C. Lee and S. Maxfield (eds.), *The Politics of Finance in Developing Countries* (Ithaca: Cornell University Press 1993), p. 61.

5. Howe, *Origins*, p. 309

6. *Guang-fu tai-wan ji chou-hua yu shou-hsing jie-shou* (*Plan on Recovering Taiwan, Receiving Japanese Surrender and Taking Over Taiwan*) (Taipei: Zhong-guo-guo-min-dang, zhong-yang-wei-yuan-hui, dang-xi-wei-yuan-hui, 1990) the collection of historical materials of modern China, No. 4, p. 393

7. Edward I-Te Chen, "Japanese colonialism in Korea and Formosa: a comparison of the systems of political control," *Harvard Journal of Asiatic Studies*, Vol. 30 (1970), pp. 147–48.

8. Wei Chi-lin, "Bai-nien-lai taiwan chan-yeh de guo-ji dao-shian" ("International orientations of Taiwan's industry in the 20th century"), in Toshiyuki Mizoguchi and M. Mataji Umemura (eds.), *Taiwan ming-yun* (*Taiwan's Destiny*), pp. 132, 153; *Kyunihon shokuminchi keizai tokei* (*Economic Statistics on Former Japanese Colonies*) (Tokyo: Toyo keizai shimposha, 1988), pp. 296–97.

and other consumer goods – were from Japan. The expansion of industry paled when compared with agricultural development. After Western firms abandoned the Asian market in the 1910s, the number of factories grew drastically, primarily in sugar refining and other food-processing industries. As the sugar industry matured in the 1930s, the growth of the industrial sector declined substantially, in spite of a major effort to diversify Taiwan's industry. The rise of chemical fertilizer, textile, metal and industrial chemical industries did little to transform Taiwan's industrial base.[9] After all, such a "crash industrialization programme" was essentially for war preparation and in most case a relocation of used production facilities. The industrialization decelerated as trade within the Empire dwindled, sea transport closed and eventually air raids intensified during the Pacific War.

Thanks to the declining mortality rate, the population in Taiwan grew from around three million to seven million during the colonial era. Income level was elevated, twice as high as that in China on the eve of the Sino-Japan war.[10] Taiwan, along with Japan and Korea, and unlike the rest of Asia, exceeded Latin America in terms of per capita output.[11] The Japanese colonial state developed as well as exploited the Taiwanese economy. While domestic uses and capital formation were close to output in the mid-1910s, they subsequently dropped to 10 per cent below gross output.[12] The growth rate of per capita consumption was far behind that of per capita production, thanks to cartelized sugar production, organized export and the control of input materials such as chemical fertilizer. Effective taxation in the rural sector was a defining feature of the Japanese colonial state in Taiwan. Other colonial states in natural resource-rich economies, such as France in Africa, only had to franchise away permits for plantation and mineral exploration, while collecting rents from the licensees. Japan, in contrast, maintained a smallholder system in Taiwan's primary sector; even sugar plantations were essentially based on tenant-owners rather than wage earners. Modernizing a smallholder-based agriculture required the expansion of the state apparatus, which in turn enhanced state capacity for extraction.

Only the primary sector was significantly transformed. As Table 1 shows, the shares of the secondary sector fluctuated, but were often high in comparison with those of the primary sector, and were much higher than those for the first two decades of the post-war era. These figures do not denote substantial industrial change in pre-war Taiwan, as a relatively large share of the industrial sector in the economy was based on sugar

9. Ho, *Economic Development*, p. 28.

10. Weng Ji-yung, "Introduction," in Chang Guo-wei (ed.), *Taiwan jin-ji fa-zhang* (*Economic Development in Taiwan*) (Taipei: Zheng-zhong, 1967), p. 19.

11. Angus Maddison, "Growth acceleration and slowdown: postwar experience in historical and compartive perspective," in Ramon Myers (ed.), *The Wealth of Nations in the Twentieth Century: The Policies and Institutional Determinants of Economic Development* (Stanford: Hoover Institution Press, 1996), pp. 32–33.

12. Simon Kutznets, "Growth and structural shifts," in Walter Galenson (ed.), *Economic Growth and Structural Change in Taiwan* (Ithaca: Cornell University Press, 1979), pp. 23, 26.

Table 1: **Taiwan's GDP and Employment by Sector, 1905–1998**

	GDP			*Employment*		
	Primary	*Secondary*	*Tertiary*	*Primary*	*Secondary*	*Tertiary*
1905	–	–	–	72.7	6.1	21.1
1910	36.4 (42.1)	28.1 (23.5)	35.5 (34.4)	–	–	–
1915	32.5 (41.4)	31.7 (24.5)	35.7 (34.1)	73.4	7.4	19.1
1920	30.0 (39.0)	29.3 (22.9)	40.7 (38.1)	71.1	9.2	19.7
1925	40.3 (39.6)	22.7 (23.1)	36.9 (37.3)	–	–	–
1930	33.9 (37.3)	28.3 (25.7)	37.7 (37.0)	71.4	9.4	19.4
1935	34.5 (32.0)	27.2 (29.0)	38.3 (38.9)	–	–	–
1940	29.1 (32.5)	31.5 (30.0)	39.4 (38.6)	63.2	12.3	24.7
1945	26.8 (23.4)	25.8 (29.5)	47.4 (47.1)	–	–	–
1950	36.0 (36.8)	15.6 (15.0)	48.3 (48.1)	–	–	–
1952	32.2	19.7	48.1	56.0	16.9	27.0
1960	28.5	26.9	44.6	50.2	20.5	29.3
1970	15.5	36.8	47.7	36.7	28.0	35.3
1980	7.7	45.7	46.6	19.5	42.5	38.0
1990	4.2	41.2	54.6	12.5	40.8	46.3
1998	2.7	34.9	62.3	8.8	37.9	53.2

Sources:

Pre-1952 GDP data is from Wu Tsong-min, "1910 nien zhi 1950 nien tai-wan di-chu guo-nei sheng-chan mao-er ji gu-ji" ("An estimation of Taiwan's gross domestic product, 1910–1950"), *Jin-ji lun-wen tsong-kan* (*Taiwan Economic Review*), Vol. 19, No. 2 (1991), pp 165–172; pre-war employment figures are based on Samuel P. S. Ho, *Economic Development of Taiwan 1860–1970* (New Haven: Yale University Press, 1978), p. 82; all post-1952 figures are from *Taiwan Statistical Data Book*, various issues. GDP figures are based on current prices; the figures in brackets are on constant prices.

refining and other agricultural food processing only. Industry in colonial Taiwan was essentially an appendix of the primary sector, which by its nature vacillated from year to year and led to the wide swings of industrial production as well.[13] Moreover, as the tertiary sector, including transportation, retails and credit, tends to grow in the wake of industrial expansion, there was only moderate growth of service sector in the pre-war era, suggesting a low multiplier effect of Taiwan's narrow industrial base under colonial rule.

Taiwanese capitalists were late to start and remained marginal players in the modern industrial sector, which was dominated by Japanese *zaibatsu*. After 1920 Taiwanese could form corporations without Japanese partnership, but by the mid-1930s, they owned at most 20 per cent of paid-in capital in joint stock corporations. The colonial authority encouraged Japanese manpower inflow into Taiwan, which alleviated the internal demographic pressure within Japan, but also reduced the need to train Taiwanese to staff the government and corporate sector. After the late 1930s, there was an intensive effort to instill "patriotism" and assimilate Taiwanese into Japanese society. But it was too late to foster Taiwanese entrepreneurs and train Taiwanese technicians. Samuel Ho estimates that Japanese accounted for 80 per cent of technicians in legal corporations, 74 per cent in trade, 80 per cent in transportation and 92 per cent in commerce.[14] Post-war Taiwanese business owners were at most apprentices during the Japanese era, in contrast with Korean *chaebols* who in most cases already had business experience under Japanese rule.

Regime Transition and ISI

The relevance of the colonial state structure and economic foundation to Taiwan's post-war development has not been a controversy, unlike in the case of South Korea. Taiwan had a longer colonial period and, upon decolonization, was neither divided by great powers nor ravaged by a civil war. Political power was directly transferred to the KMT regime rather than to a U.S. military government equipped with little economic expertise. The KMT take-over team triggered a local uprising in 1947 leading to the decimation of the local elite, but the protracted civil war was waged on the mainland. Japanese specialists were not completely repatriated, and the colonial cord helped to resume trade and investment ties later on. While overall production in 1945 was only 50 per cent of its peak during the colonial era, human capital was largely preserved. The KMT regime only had to restore, not create, education, public health, agricultural parastatals, market and financial institutions. In addition to inheriting a state structure, the regime also acquired 494 major enterprises in heavy industry and 484 minor ones in light industry. Major enterprises

13. Wu Tsong-min, "1910 nien zhi 1950 nien tai-wan di-chu guo-nei sheng-chan mao-er ji gu-ji" ("An estimation of Taiwan's gross domestic product, 1910–1950"), *Jin-ji lun-wen tsong-kan* (*Taiwan Economic Review*), Vol. 19, No. 2 (1991), pp. 127–173.
14. Ho, *Economic Development*, p. 90.

instantly became state-owned enterprises, while minor enterprises were auctioned off.[15]

The role of mainland inputs in Taiwan's economic development is a debatable issue. To some, gold shipment to Taiwan in 1949 stabilized the economy. To others, the principal stabilizers were American aid and a high interest rate policy, an unorthodox one at that time.[16] Inflow of technocrats was significant. The Joint Commission of Rural Reconstruction (JCRR) personnel were instrumental in land reform, the rebuilding of rural infrastructure and the increase of agricultural productivity, while the National Resource Commission (NRC) personnel staffed the major enterprises and economic bureaucracy.[17] However, the bulk of NRC technocrats went to Manchuria and stayed on the mainland rather than going to Taiwan. Moreover, the arrival of more than 1.5 million immigrants – mostly in civil and military services – created demand-pull inflation. In 1957, the first year reliable statistics were compiled, there were 7.8 state officials per thousand residents. The ratio rose to 16 if public school teachers and state enterprise employees were also counted as civil service. Apart from absorbing the continental-sized civil service, Taiwan's economy also shouldered heavy defence expenditure entailed by the KMT's mission of "retaking the mainland." Indeed, the civil war on the mainland had already burdened Taiwan, as its rice and sugar were siphoned off to support the war effort.[18]

Upon relocating to Taiwan, the KMT regime quickly disciplined its own factions, reorganized its hitherto fragmented military and extended its arms to nearly every social organization. Externally, thanks to the Korean War, the regime was conferred with foreign aid and a stabilized security environment. The first development project it undertook was a redistributive land reform. Insulated from the landlord class, the KMT regime assigned property rights to land tillers, thereby altering the incentive system in the agricultural sector. With the restoration of the agricultural technical research and extension service, the agricultural sector re-emerged as a surplus base. Rice, sugar and, later on, other

15. *Plan on Recovering Taiwan*, p. 424.

16. See Chao Ji-chan, *Mei-yuan de yun-yung* (*The Use of U.S. Aid*) (Taipei: Lien-jing 1985), pp. 99–114, and Liu Fu-chi, "Taiwan you tung huo peng zhang dau jing ji wen-ding de jin-zong fa-zhan" ("Financial development in Taiwan: from inflation to stability"), in Paul Chiu (ed.), *Taiwan huo-bi yu jing-ji* (*Money and Economy in Taiwan*) (Taipei: Lien-jing 1980).

17. William C. Kirby, "Technocratic organization and technological development in China: the Nationalist experience and legacy, 1928–1953," in Dennis Simon and Robert Sutter (eds.), *Science and Technology in Post-Mao China* (Cambridge, MA: Harvard University Press, 1989), and Huang Chun-chieh, interviewer, *Zhong-guo nong-chun fu-hsing lien-ho wei-yuan-hui: kou-xu li-shi fang-wen ji-lu* (*The Reminiscences of the Staffs of Sino-American Joint Commission on Rural Reconstruction*) (Taipei: Institute of Modern History, Academia Sinica, 1992).

18. Wu Tsong-Min, "1945–1949 nien guo-ming zheng-fu duai tai-wan de jing-ji zheng-tse" ("The Nationalist Government's economic policies regarding Taiwan, 1945–1949"), *Jin-ji lun-wen tsong-kan*, Vol. 25, No. 4 (1997), pp. 521–554. Cf. Chang Jia-nau, "Taiwan guang-fu chu-chi yu da-lu ji jing-ji guan-si" ("Economic relations between Taiwan and the mainland in the immediate post-war years"), *Zhuan-ji wen-hseuh* (*Biographical Literature*), Vol. 37, No. 6 (1981), pp. 101–104.

commercial crops became the main export items until the mid-1960s. Through tax payment in kind, the fertilizer-grain barter system and the monopoly of sugar refining, farmers were squeezed to support the industrial sector. Between 1952 and 1969, the official purchasing price for rice was 27.1 per cent below the market level, while that for sugar was 12.54 per cent below the international price.[19] The government collected about 50 per cent of rice that left the village, and about 60 per cent of that collected was used to feed members of the military and civil service and their dependents, with the rest used for the domestic and export markets, either to stabilize prices or earn foreign exchange.[20] The extraction of agricultural surplus also helped the government to blunt wages and entertain the tax incentive policy to promote industry.

It was in the industrial sector that there was an entirely new strategy, namely import substitution industrialization (ISI) in the non-durable consumer good sectors. Based on the infant industry argument and endorsed by influential development economists such as Raul Prebisch, ISI was in the 1950s a prevailing ideology for late industrializers. For the KMT regime, ISI was not so much a choice as a situational imperative.[21] The demand-pull inflation in the period of post-war reconstruction and lack of savings led the regime to restrict imports, allocate foreign exchanges and tolerate overvalued exchange rates. Once the government slipped into ISI, it pursued this strategy most vehemently. Initially, three industries were earmarked for expansion: chemical fertilizer, plastics and textile. The first was to be undertaken by the existing state firms, the second to be transferred to the private sector, while the third was to be entrusted to existing firms. Subsequently, the synthetic fibres, glass and food industries were added to the list, all assigned to the private sector. ISI industries received tariff protection, hard currencies, targeted loans and the government's tight control over new entrants. In the textile industry, the government also used American aid cotton and guaranteed purchases of output to encourage mill owners to expand their capacity, a modus operandi akin to the *shokusan kogyo* formula in the colonial era. While in the plastics and synthetic fibre industries the state often had to cajole private firms to take over model plants it built, in the textile industry there was no shortage of investors, given the huge and assured profits. ISI industries were criticized for seeking unfair policy privileges yet producing low-quality goods. The government remained vigilant on corruption and suspended policy loans in 1958.

Here lies a puzzle. The KMT regime did not display so much of a

19. Teng-hui Lee, *Intersectoral Capital Flows in the Economic Development of Taiwan 1895–1960* (Ithaca: Cornell University Press, 1971), and Ban Yu-yuan, "Taiwan nong-yeh jai jing-ji fa-zhan guo-chen zhong ji gong-hsien yu de-wei" ("Taiwan's economic development: the contribution and role of the agricultural sector"), *Taiwan yin-hang ji-kan* (*Bank of Taiwan Quarterly*), Vol. 23, No. 2, p. 33.

20. Ho, *Economic Development*, p. 182.

21. Tun-jen Cheng, "Political regimes and development strategies," in Gary Gereffi and Donald Wyman (eds.), *Manufacturing Miracles* (Princeton: Princeton University Press, 1990), p. 144.

predatory nature in Taiwan as it did on the mainland.[22] The opportunity to indulge in rent-seeking and plundering was actually wider in post-war Taiwan. As well as issuing import and factory permits, the regime now had control of all tax revenue, nearly monopolized the banking sector, possessed half of industrial productive capacity, and allocated foreign exchanges derived from agricultural export and foreign aid. In addition, the political project of retaking the mainland permitted the regime to declare martial law and conveniently suspend national elections for an indefinite period. Opposition parties were both unwilling and unable to provide democratic oversight.

Self-imposed discipline was at work. Lessons from its defeat by the Communists on the mainland permeated the discourse within the party to the extent of canonization. As inflation and corruption were diagnosed as causes of its loss of the mainland, the KMT regime firmly believed in fiscal and monetary conservatism, and the separation of technocrats from political elite. Any technocrat deviating from economic orthodoxy bore the burden of persuasion. The KMT as a party did obtain some import privileges, but abstained from establishing a department of economic affairs to meddle with technocrats and foreign aid agency. Moreover, factions were streamlined into two groupings, the "in power" and the "out of power." The first group was credited with the rebirth of the regime on Taiwan and would defend economic policies that technocrats pursued. The second consisted mainly of those who were blamed for the loss of the mainland but would now exercise oversight over the government, a practice acquiesced to by the regime leadership.[23] Policy debates and criticisms were fierce and frequently consequential: the main architect of economic development strategy, K. Y. Yin, went through several rounds of resignation and reinstatement.

Other imposed discipline was at work as well. Given that the KMT regime came to Taiwan with a continental-sized civil service and wanted to maintain combat readiness to recover the mainland, it had a rigid budget structure. American aid hence became the major source of disposable funding, giving the aid agency a leverage in designing and implementing development projects. The Taiwan side could propose, but aid commissioners disposed. Apart from contributing to economic stabilization, American aid also alleviated the goal conflict between maintaining military preparedness and promoting economic growth.[24] Most significantly, aid filled the gaps between savings and investment, and between export earnings and import needs in the early post-war decades. Aid in kind was crucial to the expansion of the food and textile industries,

22. For the pre-war era, see Albert Feuerwerker, *Economic Trends in the Republic of China, 1912–1949* (Ann Arbor: Center for Chinese Studies, University of Michigan, 1977); Park M. Coble, Jr., *The Shanghai Capitalists and the National Government, 1927–1937* (Cambridge, MA: Harvard University Press, 1986); Thomas Rawski, *Economic Growth in Prewar China* (Berkeley: University of California Press, 1989), ch. 1, especially p. 23.

23. Fu Chi-xue *et al.*, *Zhong-hua min-guo jian-cha-yuan ji yen-chiu* (*A Study of the Control Yuan in the Republic of China*), n.d.

24. Wen xing-ying, *Jing-ji chi-ji de bei-hou* (*Behind Economic Miracle*) (Taipei: Independent Evening News Publisher, 1989), p. 226; Ho, *Economic Development*, p. 111.

while aid funds were key to the emergence of the plastics, synthetic fibre, glass and cement industries. Under donors' persuasion, the KMT regime accepted their growing autonomy in economic activity and permitted technocrats to have a high degree of operational freedom. And because of the mismanagement of aid by the regime on the mainland, the aid agency in Taiwan was involved in both allocative decisions and auditing, much more so than in South Korea.[25]

American aid, geopolitical ties with the West, and the sub-ethnic divide between Taiwanese and mainlanders had important implications for the development of the indigeneous private sector. The regime dominated heavy industry, and thus left some room for the private sector to develop in the light industry area. Yet investment opportunities initially went to Shanghai and Shandong capitalists – who loyally migrated to Taiwan – rather than to native entrepreneurs who were believed to have no managerial skills.[26] In the financial sector, only non-bank financial intermediaries, such as co-operative credit and insurance, were open to the private sector. Only four major state enterprises were divested to compensate the landowners in the wake of land reform. State capitalism was in line with the teaching of Sun Yat-sen, founding father of Nationalist China, and the preference of many socialist-oriented KMT ideologues. However, the doctrine and praxis of restraining private capital did not work well with the reality of Taiwan's political association with Western capitalism. The aid agency constantly prescribed specific development programmes to nurture the private sector.[27] Moreover, given the criticism of their intimate ties with mainlander capitalists, technocrats – already burdened with the task of managing huge state enterprises – began to entertain the idea of promoting Taiwanese capitalists.

Outward Orientation and Industrial Change

Taiwan's economy more-or-less recovered from wartime destruction in 1955, but it began to soar only after turning outwards in 1960 to exploit export markets for light industry goods.[28] This policy was followed by industrial deepening in the 1970s, and industrial upgrading and diversification from the 1980s. In each episode, a perceived economic crisis provided the rationale for the state elite to espouse a new goal and suggest new policies. Not all were carried out, but economic structure in terms of market direction, the ownership pattern and industrial composition did undergo change. Taught by the American aid agency, economic technocrats detected market opportunities and used mostly market con-

25. David C. Cole, "Foreign assistance and Korean development," in David C. Cole, Youngil Lim and Paul W. Kuznets, *The Korean Economy: Issues of Development* (Berkeley: Institute of East Asian Studies, 1980).

26. Huang Chin-shing, *Ban xi-ji de fun-dou: Wu Ho-xi sien-sheng kou-xou zhoung-ji* (*Business as a Vocation: the Autobiography of Mr Wu Ho-su*) (Taipei: Asian Culture Company, 1990), p. 151.

27. Neil H. Jacoby, *U.S. Aid to Taiwan* (New York: Praeger, 1966)

28. Stephan Haggard, *Pathways from the Periphery* (Ithaca: Cornell University Press, 1990), ch. 4.

forming incentive schemes to foster industrial entrepreneurship.[29] Moreover, the same pool of technocrats continued to steer the course of development.

Promoting industrial export. As ISI output in non-durable consumer good sectors saturated the domestic market, economic growth slowed down, creating an unemployment problem. By the late 1950s, it had also become clear that the United States would phase out aid to Taiwan. A new development strategy was needed to sustain economic growth. Undertaking ISI in the capital good and durable consumer good sectors was undesirable for an economy like Taiwan's with few natural resources. Yet there was initially little confidence in using the export market as an engine for economic growth. It was as a result of the persuasion of Chinese-American economists and the aid agency that the regime finally undertook policy reforms to re-orient the economy towards world markets. This decisive move simplified the exchange rate regime, devalued currency, and adopted several measures to promote export and private investment.

The overall policy objective was to expand industrial exports to absorb surplus labour and eventually use foreign earnings as the main capital source for sustained economic growth. Expecting the termination of economic aid, technocrats proposed to use foreign borrowing and the proceeds from the privatization of SOEs to establish a state fund to advance seed money and long-term lending to firms. Few SOEs were privatized, while development financing was not activated. Instead, short-term export financing, tax incentives, import duty rebates and foreign direct investment emerged as the main policy tools for the expansion of export industries. The Statute for the Encouragement of Investment (SEI), enacted in 1961, gave tax benefits to export firms in almost all sectors as well as newly formed enterprises in "pioneer" sectors, such as electronics, promoted by the government. Export financing was not sector-specific, but automatically extended to any firm with export orders. Import tariff barriers still existed, but export-processing firms would receive import duty rebate. In export processing zones, firms had a completely duty free environment for their production and export, a condition conducive to the inflow of FDI already enticed by low wage levels in Taiwan. The government also established a good dozen industrial estates across the island to tap the abundant labour supply. All these measures facilitated new entrants and the proliferation of small and medium enterprises (SMEs). Numerous firms gained from fiscal incentives and export financing, while FDI had the effect of nurturing small local firms as component suppliers. By letting "a hundred flowers bloom," Taiwan managed to support the private sector without nurturing big capital.

29. They display leadership, not followership, in Robert Wade's words. See his *Governing the Market* (Princeton: Princeton University Press 1990), ch. 10.

Industrial deepening. The result of export promotion was evident. Labour-intensive, export-oriented industries briskly multiplied, and the industrial sector quickly exceeded the agricultural sector in total output, employment and export, while private enterprises replaced state-owned enterprises as the core of manufacturing sector (see Tables 2 and 3). And yet, in the early 1970s, economic technocrats were already deploring the shallowness of the Taiwanese economy and beginning to call for industrial deepening via backward linkage. Technocrats detected two alarming trends, the diminishing supply of surplus labour and the creeping protectionism in major markets. Additional considerations further lent support to the call for backward linkage. First, downstream industries had expanded to such a degree as to create huge domestic demand for intermediate and upstream products. In addition, steel, shipbuilding and petrochemical industries would not only help to supply capital goods and input materials to downstream sectors, they would also underpin the defence industry.

Technocrats urged the divestment of state-owned banks to establish a development fund to assist the private sector to undertake heavy and

Table 2: **Production and Ownership Structure in Post-war Taiwan's Manufacturing Sector, 1952–1998**

	Light	*Heavy and chemical*	*Private*	*State-owned*
1952	n.a.	n.a.	43.8	56.2
1960	76.0	24.0	56.2	43.8
1970	65.7*	34.3*	72.3	27.0
1980	53.8	46.2	85.5	14.5
1990	33.6	66.4	89.7	10.6
1998	28.5	71.5	92.1	7.9

Note:
*The 1972 figures.
Source:
Taiwan Statistical Data Book, various issues.

Table 3: **Post-war Taiwan's Export Structure, 1952–1998**

	Agriculture (raw and processed)	*Industrial*	*Heavy and chemical*	*Others*
1952	91.9	8.1	4.7	95.3
1960	67.7	32.3	10.2	89.8
1972	16.7	83.3	26.6	73.4
1980	9.2	90.8	35.6	64.4
1990	4.5	95.5	46.7	53.3
1998	1.8	98.2	64.3	23.9

Source:
Taiwan Statistical Data Book, various issues.

chemical industrialization (HCI). Yet the political leadership shunned divestment, precluded the private sector from upstream petrochemical production, and hoped to recruit private participation in major steel and shipbuilding projects. Leading private firms in the plastics and textile industries did subscribe to midstream petrochemical projects, but failed to become junior partners of an integrated steel mill and a large shipyard. The development fund was established in 1973 to assist public investment, high tech development and important (that is, existing) industries in the private sector. Eventually undercapitalized SOEs and the government-sponsored infrastructure projects absorbed most loans advanced by this fund. Apart from supplying capital, the state also afforded tariff protection and import restriction to effectuate ISI for basic and upstream chemical products. Such an ISI deepening, however, was to support, not supplant downstream export industries, unlike in the case of Latin America. In fact, as downstream industries were the main foreign exchange earners, the government was often forced to lift import bans on input materials. The KMT leadership also boosted lending facilities for SMEs and established loan facilities for the agricultural sector. When the oil crisis and the attendant world recession set in, the government quickly scaled down HCI projects. Meanwhile, it continued to use tax incentives to encourage the upgrading of the existing export oriented industry.

Taiwan thus pursued a mild HCI, unlike South Korea's big push approach to it using massive foreign borrowing and a coterie of big business firms. Taiwan thus avoided the "big push" problems of high inflation, massive foreign debt, a worsening income distribution and economic crisis-induced political instability. A mild HCI also prevented the making of highly leveraged, oversized conglomerates at the expense of SMEs, while permitting the government to sustain an educational reform that extended the years of basic schooling and expanded technical training. However, while Taiwan's industrial base was "deepened," its overall structure was not as drastically transformed as in Korea. Basic and petrochemical industries did not become the mainstay of Taiwan's export, which continued to be dominated by labour-intensive items, notably textiles, garment and consumer electronics.[30]

Industrial upgrading. Throughout the 1970s, the industrial sector expanded further, and the agricultural sector was almost marginalized, now in need of subsidy and protection. However, industrial productivity was not improving, and in fact, even had a negative growth rate (see Table 4). Meanwhile, wages rose as the surplus labour diminished. In the late 1970s, then, technocrats called for the upgrading of industrial production and the creation of high value-added export sectors. Korea's sector-specific policy served as a model to develop "strategic" industries, mainly machinery and information, which had great market potential, linkage effects, high added value, high technology input, low energy use

30. For industrial promotion and deepening, I drew heavily from Cheng, "Political regimes and development strategy," pp. 153–172.

Table 4: **Growth Rates of GDP and Total Factor Productivity (TFP) 1961–1993 in Taiwan (per annum)**

	GDP (real)	*TFP*
1961–73	10.80	0.47
1973–82	7.97	− 0.14
1982–87	9.29	4.31
1987–93	6.63	2.74

Source
Chi-yuan Liang, "Productivity growth in Asian NIEs: a case study of the Republic of China, 1961–1993," *APO Productivity Journal*, Winter 1993, p. 20.

and low pollution effect. Two state financial institutions would advance long-term lending to these industries, while the 1960 SEI underwent a major revision in 1981 to encourage spending on research and development as well as the use of energy-saving machinery.

The policy for industrial upgrading failed in the automotive industry, fared better in the machine tool industry, and has been lauded in the semi-conductor and computer sectors. A huge joint venture involving Toyota, state and local capital did not happen, as Toyota hesitated to commit to transferring technology and increasingly exporting the planned outputs. Behind the high tariff wall, erected in 1961, Taiwan's five automobile makers continued to assemble foreign components. In 1984, the government suddenly lifted the entry restrictions, allowing seven more firms to join the fray for a well-protected market. Yet industrial shakeout did not ensue and Taiwanese cars remained not exportable.[31] The condition for machine tools – the other pillar of the machinery industry – has not been as dismal, however. It received less protection and support from the government, thanks to the lack of political clout of apprentice-turned entrepreneurs.[32] While overshadowed by Korean firms, Taiwan's machine tool makers were able to carve out some niches in the international market.

Industrial policy for the information industry did not involve any protection or public–private joint venture. But the government did lend strong support to the industry, unlike the case of the machine tool industry. Apart from extending tax incentives and concessionary loans, it sponsored research and development activities, actively nurtured skilled personnel and transfer technology to the private sector, participated in the formation of venture capital firms, and established a science-based indus-

31. Chen Tein-chi, "1980 nien-dai i-lai tai-wan de mau-I ji-yu-hua" ("Trade liberalization in post-1980 Taiwan"), in Shih Jian-sheng (ed.), *1980 nien-dai i-lai tai-wan jing-ji fa-zhan jing-yen* (*Economic Development in Post-1980 Taiwan*) (Taipei: Chung-hua Institute of Economic Research, 1999).

32. Staffan Jacobson, "Industrial policy for the machine tool industries of South Korea and Taiwan," *Institute of Development Studies Bulletin*, Vol. 15, No. 2 (1984), pp. 44–49.

trial park to house new ventures. The role of parastatals, most notably the Industrial Technology Research Institute, was crucial. Free from bureaucratic control, yet continuously receiving budgetary support, these parastatals have trained more than 10,000 highly skilled workers, housed returnees from Silicon Valley, established laboratories for testing products, and brokered R & D consortia. By identifying market opportunities, diffusing technology and co-ordinating market players, these parastals alleviated information and collective action problems, and incubated engineers-turned-entrepreneurs.[33] The role of government was thus essential during the 1980s – the seed and start-up stages – of Taiwan's semi-conductor and computer industries, though less so during the 1990s – the expansion period when local firms entered strategic alliances with leading Western firms.[34]

While the high tech sector made progress under government support, others were not left in the cold. Almost all industries received fiscal incentives one way or another. Export incentives remained intact. A credit facility for "key industries" was also established to finance broad types of investment in anti-pollution devices and automation, the purchase of locally produced machinery and software, and projects supported by the CEPD. Credit facilities for SMEs, which were greatly enhanced in the 1970s to help them endure the hardship of economic downturn, saw drastic improvement in the 1980s. More importantly, there was a crucial evolution from supporting sectors to supporting functional-oriented activ-

Table 5: **Export Commodities by Intensity of Input Factor for Taiwan, 1982–1997**

	Degree of labour intensity			*Degree of capital intensity*			*Degree of tech intensity*		
	High	*Mid*	*Low*	*High*	*Mid*	*Low*	*High*	*Mid*	*Low*
1982	47.2	30.8	21.9	26.9	45.4	27.6	18.3	32.6	49.1
1985	45.9	35.6	18.5	24.5	48.7	26.8	18.8	33.6	47.6
1990	41.0	38.3	20.7	28.9	50.5	20.5	26.7	38.6	34.7
1995	36.4	40.6	23.0	31.9	56.5	11.6	36.5	41.4	22.0
1997	34.9	43.1	22.1	30.3	60.6	9.1	39.7	41.1	19.2

Source:
Taiwan Statistical Data Book, 1998.

33. Greg Noble, *Collective Action in East Asia* (Ithaca: Cornell University Press, 1998), ch. 6; Tun-jen Cheng, Stephan Haggard and David Kang, "Institutions and economic policies," the United Nations Conference of Trade and Development, 1996, pp. 88, 90.

34. See Chen Dung-sheng, "Ji-ti den-lu chan-yeh zhu-zhi wan-lo de shing-shih ji chi hsing-chen de zhi-du ji-chu" ("The formation and institutional basis of network organizations in Taiwan's integrated-circuit industry"), in Wei-an Chang (ed.), *Taiwan de chi-yeh* (*Enterprises in Taiwan*) (forthcoming), p. 10; J. A. Mathews, "Silicon Valley of the East: creating Taiwan's semiconductor industry," *California Management Review*, Vol. 39, No. 4 (1997), pp. 26–54; Chi Schive, "The next stage of industrialization in South Korea and Taiwan," in Gereffi and Wyman, *Manufacturing Miracles*, pp. 285–88.

ities. In 1990, the SEI was abolished and replaced by the Statute on the Upgrading of Industry, under which the government no longer promotes specific industries, but rather provides only "functional incentives" for R & D, anti-pollution spending and other industrial upgrading activities.

Taiwan's industrialization accelerated in the 1960s, but it was during the final two decades of the 20th century that Taiwan's industry was drastically transformed. As Table 5 shows, between 1982 and 1997, the technology intensity of Taiwan's exports had drastically improved. The semi-conductor and computer sectors have become leading exporters and the mainstay of Taiwan's industry. As revealed in Table 5, total factor productivity grew significantly from 1982, departing from the previous pattern of economic growth described by Paul Krugman as one based on factor inputs rather than productivity improvement.[35]

Liberalization, Democratization and the Asian Financial Crisis

Despite its outward orientation and export success, Taiwan's economy remained largely closed, even in industries that were already export competitive such as textiles and consumer electronics. Foreign direct investment was let in only in certain sectors and often subject to local component and export ratio requirements. Moreover, state capital continued to dominate high finance, upstream production, transportation and telecommunication. Additionally, the exchange rate was held steady, even though foreign exchange reserves had been piling up. Beginning in the second half of the 1980s, however, the economy came under the pressure of liberalization. The principal catalyst was the unprecedented 35 per cent appreciation of Taiwan's currency in 1987–88, a result of the post-Plaza Accord currency alignment. Economic liberalization proceeded almost simultaneously with democratic transition from 1986 to 1996. As democratization unleashed the conflicting forces for both liberalization and protectionism, the state was often caught in the vortex. Economic policies often followed the private sector's audacious moves and denoted the state following rather than leading in the market.

The pressure for import liberalization came from the United States, a leading economic partner that ran chronic trade deficits with Taiwan. But the main impetus was the potent threat of inflation created by the persistent trade surplus that reached 21 per cent of GNP in 1986. The government first removed import restrictions and then set to reduce tariff rates.[36] In lifting the import ban, the government overruled large business groups in long-protected sectors, such as car, petrochemical and home consumer electronics. As political democratic change unfolded, tariff reduction met resistance in sectors with a higher degree of market concentration and hence greater capacity to take collective action. The

35. Paul Krugman, "The myth of Asia's miracle," *Foreign Affairs*, Vol. 73, No. 6 (1994) pp. 62–78; Chi-yuan Liang. "Productivity growth in Asian NIEs: a case study of the Republic of China, 1961–1993," *APO Productivity Journal*, Winter 1995, pp. 17–40.

36. Chen Tein-chi, "Trade liberalization."

liberalization schedule was slowed down, and in some sectors, notably agriculture, a compensation package is needed.[37]

Taiwan's outward direct investment was essentially a consequence of currency appreciation in 1987 and the ensuing decontrol of capital outflow (capital inflow is still regulated, however). Facing rising labour costs, high land prices, more environmental regulation and, most directly, currency appreciation, export-oriented SMEs in traditional sectors spearheaded Taiwan's investment overseas without government approval. Following their exodus, the state set to assist their overseas ventures by sponsoring industrial estate development and providing legal and financial services in South-East Asia. But this policy was also designed to direct the flow of investment away from China, which has the advantages of cultural affinity, geographical proximity and abundant surplus labour. Runaway SMEs, however, sank more capital in China than South-East Asia, forcing the government to revise its policy to recognize the *fait accompli*. Meanwhile, these SMEs have assiduously woven transnational production networks and become a new breed of multinationals in the Asian economic landscape.

De-regulation policies in well-protected telecommunication, airline and other service sectors, such as banking, insurance, securities and retail chains, were also responses to pressures rather than state initiatives. Dominated by state enterprises or a few leading private firms, these sectors had been targeted by American trade representatives since the late 1980s. Political democratization in Taiwan triggered mounting criticisms against these monopolies both among the public and the legislators, leading the government to deregulate nearly all of them. New licences mostly went to foreign corporations, leading domestic market-oriented business groups and joint ventures of various sorts. More than anything else, the process and the result of de-regulation in these service sectors testify to the ascension of business to political power with the onset of democratic transition. Many business groups have become involved during the succession battle within the KMT, as well as for elections, thereby gaining significant representation in both the legislature and the KMT ruling structure.

As a result of economic liberalization, there have been the following structural changes. The service sector has surpassed industry in terms of the share of GDP and employment (Table 2). Taiwan emerged as a capital exporter, as established SMEs – those in traditional sectors – became mini-multinationals in coastal Asia. Replacing them as the mainstay of Taiwan's exports are new SMEs in high tech sectors that act as a link in the global production chain of Western firms. State capital further retreated from all commanding heights of the economy except for petroleum refining and defence industries. Big business groups, including the KMT-owned enterprises, and foreign corporations loomed large in a liberalized domestic market.

The state has not lost its capacity to affect economic change in the

37. Tun-jen Cheng, " 'Democratic transitions and economic policymaking in South Korea and Taiwan," *Journal of International Political Economy*, March 1997, pp. 41–60.

newly democratized Taiwan. The age-old ruling KMT is financially rich and, until recently, never lost its grip over political power, leaving little opportunity for businesses to threaten to switch political loyalty to the opposition. Loosely organized and ill-equipped, the business sector in Taiwan rarely took collective action or offered a credible policy proposal, a dire contrast with Korea. Many business groups are influential in the legislative branch, but this institution lacks a seniority system to foster expertise for policy deliberation. Yet to democratize internally, and with a top leader approving all nominations and adjudicating all party affairs, the KMT had been able to limit the influence-buying and rent-seeking activities of individual businesses. The Democratic Progressive Party, which assumed power in May 2000, has a mandate to trim political clout of businesses.

The state, however, has refined its role and its policy preference. Economic technocrats have become more blame-avoiding than credit claiming, issuing, for example, as many licences as possible in the banking, securities and telecommunication sectors, and permitting market shake-out. This does not mean that the developmental state has metamorphosed into a regulatory one. Through its experience in promoting the high tech sector, the state elite has learned not to shape industrial structure or pick winners, but merely provide promising industries with manpower services, technology, mechanisms of co-ordination and operations centres, and assist traditional industries in terms of product design and automation. The state elite has also learned to increase spending on programmes for various constituencies, yet stand firm for conservative monetary policy.[38]

Not only has the developmental state not unravelled in the light of globalization and democratization, the economic structure shaped by its policies has weathered well the recent Asian regional financial crisis. Fortuna – hoarding huge foreign exchange reserves – aside, the distinctive features of Taiwan's developmental model help to account for its relative immunity from the crisis. The principal incentive scheme for industrialization has been fiscal incentives and technological support rather than credit allocation and loose monetary policy. The primary agent for development has always been SMEs of various sorts rather than national champions. Hence, entrepreneurs are diverse, industrial structure is polymorphous and no business group is too big to fall. The approach to foreign capital is less mercantilist or nationalist than that in Korea and Japan, and hence it is less problematic for Taiwan to embrace the globalization trend.[39] East Asia's economic development in the 20th century began with the emergence of Japanese power in the region and ended with a region-wide financial crisis. The *fin de siècle* crisis hit as if it would test the robustness of various developmental models. The one in Taiwan has stood well in this test.

38. Tun-jen Cheng, "Economic implications of political democratization," in Shih Jian-sheng (ed.), *Economic Development in Post-1980 Taiwan* (London: Elgar, forthcoming).

39. Tun-jen Cheng and Yun-han Chu, "State–business relationship in Korea and Taiwan," in Laurence Whitehead (ed.), *Economic and Political Reform in Latin America and East Asia* (forthcoming).