The Economic Transformation of the Republic of China on Taiwan

Ramon H. Myers

Just as the Greek hero Odysseus faced many misfortunes and great challenges and yet overcame them before returning to his beloved Ithaca, so, too, the Republic of China on Taiwan in 1949–50 faced insurmountable odds and difficulties and year-to-year crises thereafter, and yet also overcame them to achieve economic modernization and prosperity.[1]

In 1950 the Nationalists suffered from severe inflation, feared an invasion by communist forces and faced an angry populous. By 1952 inflation had been tamed, the communist invasion had not materialized, and Taiwanese anger had been defused by land reform and the rapid economic recovery already underway. Then, in the mid 1950s, the economy failed to create enough jobs due to a slow down in the expansion of heavy industry. In 1958 the government began dismantling the dual exchange rate system and encouraging industries to export.

But just when these policies were starting to succeed in the mid 1960s, wages began to rise and skilled labour became scarce. Added to these new cost pressures in 1973 oil prices became exceedingly high, which contributed to a great rise in over-all costs in some industries, which in turn began to undermine the island's trade competitiveness.[2] By 1975 the economy had readjusted, growth had resumed and policies enacted to reduce dependency upon oil imports. Then in 1979 the United States severed diplomatic relations and a year later cancelled its Defence Treaty. In spite of this political shock and the uncertainty it created, Taiwan's economy continued to develop rapidly until 1981 when a worldwide recession began to depress economic activity and increase unemployment. By late 1983 the economy had rebounded, per capita income rose to nearly 10 times that of the People's Republic of China, and the two-way trade between Taiwan and the United States reached almost US$16 billion, making Taiwan America's 15th largest export market and its sixth largest source of imports.

All these crises had been overcome while the economy rapidly reduced its dependency upon agriculture and primary product export to become a manufacturing society tightly linked to the world economy. Even more remarkably, Taiwan had achieved a more equal distribution of income than other countries of comparable per capita income.

Taiwan's rapid economic transformation must be viewed in that complex relationship between economic growth, income distribution and

1. The author fully recognizes that the legacy of Japanese colonialism and roughly US$1.5 billion aid support between 1950 and 1965 greatly assisted the Nationalist regime in their efforts to modernize the ROC economy on Taiwan, but he believes these were only necessary and not the sufficient conditions that explain the remarkable economic transformation that took place. This article tries to explain exactly what those sufficient conditions were.

2. For the best study of how the oil price increase influenced the industrial cost structure see Shirley W. Y. Kuo, *The Taiwan Economy in Transition* (Boulder, Colorado: Westview Press, 1983), Ch 10, p. 194.

productivity. Within that context private enterprise has been flexible enough to adopt new technology and facilitate resource reallocation from agriculture to industry and services, and within manufacturing from food processing, leather making and textiles to electronics, machine tools and car assembly parts. The public sector has co-ordinated many of the activities of the private sector, and the state-controlled enterprises have produced vital goods and services. Finally, the dynamic interaction between the private and public sectors owes much to the state's taking the lead with policies enriched by the ideas of Sun Yat-sen.

But the transformation of Taiwan's economy was neither easy nor smooth: every success brought new challenges, which, if not overcome, could have hindered economic development and possibly led to political crisis and social instability. By the mid 1950s, just when inflation had been conquered and a small industrial base established, unemployment started to rise and some industrial capacity became idle. In the 1960s, at a time when the state had liberalized foreign trade and promoted export industries to make trade the engine of growth, labour became scarce and wages rose rapidly. Then rising oil prices, along with the rise of domestic costs already underway, combined to generate the highest inflationary spurt since the late 1940s. Just when the economy had weathered a protracted world recession of the early 1980s, protectionist policies to limit Taiwan's exports began spreading in some advanced industrial nations.

Taiwan still faces new challenges to restructure its economy. There are far too many inefficient, small farms that continue to produce rice which the government, at great expense, must buy from the market in order to stabilize farm income. Far too many large public enterprises are still managed inefficiently. Older industries like sugar, leather, textiles and paper-making must be made more productive and excess resources deployed elsewhere. The economy also faces serious challenges in the world economy. Taiwan's trade surplus with the United States is now unprecedentedly high and threatens to create ill-feeling in a country Taiwan needs as a friend. Taiwan faces intense competition from other Asian countries to maintain its market shares in Japan, the United States and Europe. Further, Taiwan's image as the leading counterfeit producer of a great variety of consumer goods sold in the world market does not help its efforts to expand trade. Finally, new economic problems at home are likely to increase costs and adversely affect this island-state's foreign trade competitiveness: environmental groups urge the reduction of industrial pollution; the burden of defence spending gradually increases because of Taiwan's diplomatic isolation. In the context of these kinds of problems and difficulties, the rapid economic transformation of the ROC in the recent past should be examined to determine if it can surmount them.

Economic Growth, Income Distribution and Productivity

Small and densely populated, the ROC on Taiwan has achieved high, sustained economic growth rates after a remarkable recovery, within a

Table 1: **Main Economic Indicators**

	Production				*Price Index*			*Foreign Trade*		
Period	*Economic Growth Rate*	*GNP*	*Industrial Production Index*	*Per Capita Income*	*GNP Deflators*	*Wholesale Prices*	*Consumer Prices* ③	*Exports of Goods and Services*	*Imports of Goods and Services*	*Balance of Trade*
	%	*million NTS*	*1976 = 100*	*US$*		*1976 = 100*			*million NT$*	
1951	—	12,252	3·2	137	15·28	19·39	14·02	1,255	1,834	−579
1952	12·05	17,162	4·0	186	19·10	23·87	18·09	1,385	2,438	−1,053
1953	9·32	22,859	5·0	159	23·27	25·97	21·40	1,977	3,163	−1,186
1954	9·57	25,083	5·3	168	23·30	26·58	21·75	1,631	3,738	−2,107
1955	8·09	29,835	6·0	192	25·64	30·33	23·92	2,469	3,764	−1295
1956	5·50	34,212	6·2	133	27·87	34·18	26·43	3,097	5,456	−2,359
1957	7·28	39,881	7·0	149	30·29	36·65	28·42	3,823	5,879	−2,056
1958	6·56	44,502	7·6	162	31·71	37·16	28·78	4,592	7,458	−2,866
1959	7·75	51,369	8·5	122	33·97	40·97	33·27	6,415	10,696	−4,281
1960	6·47	62,143	9·7	143	38·60	46·77	39·41	7,021	11,723	−4,702
1961	6·83	69,594	11·2	142	40·47	48·28	42·50	9,613	14,578	−4,965
1962	7·85	76,652	12·1	151	41·33	49·75	43·50	10,331	14,448	−4,117
1963	9·37	86,710	13·2	166	42·75	52·96	44·45	15,432	16,431	−999
1964	12·31	101,492	16·0	189	44·55	54·27	44·37	19,744	18,969	775
1965	11·01	111,895	18·6	203	44·24	51·75	44·34	20,965	24,338	−3,373
1966	9·01	125,343	21·5	221	45·47	52·52	45·23	26,596	26,247	349

1967	**10·56**	**144,839**	**25·1**	**249**	**47·52**	53·84	46·75	31,504	34,489	−2,985
1968	**9·07**	**168,695**	**30·7**	**283**	**50·74**	55·44	50·44	40,371	45,203	−4,832
1969	**9·00**	**195,693**	**36·8**	**320**	**54·00**	55·31	52·99	51,539	52,963	−1,424
1970	11·27	225,293	44·2	360	55·87	56·81	54·88	66,956	67,070	−114
1971	12·90	262,125	55·1	410	57·58	56·82	56·43	91,747	85,259	6,488
1972	13·31	314,369	66·8	482	60·94	59·35	58·12	131,293	111,550	19,743
1973	12·82	407,419	77·6	642	70·01	72·92	62·87	190,737	168,973	21,764
1974	1·12	554,847	74·1	852	92·59	102·51	92·72	238,108	280,691	−42,583
1975	4·24	581,150	80·4	888	94·74	97·31	97·57	229,530	248,836	−19,306
1976	13·48	696,101	100·0	1,039	100·00	100·00	100·00	331,516	316,254	15,262
1977	9·86	811,819	113·6	1,182	106·16	102·76	107·04	401,758	360,962	40,796
1978	13·85	967,938	140·7	1,421	111·18	106·39	113·22	514,754	449,666	65,088
1979	8·08	1,164,473	151·9	1,722	123·75	121·11	124·26	627,460	616,983	10,477
1980	6·60	1,440,778	166·1	2,101	143·64	147·20	147·89	775,122	794,765	−19,643
1981	5·04	1,694,482	172·7	2,360	160·82	158·42	172·04	909,524	870,697	38,827
1982	3·90	1,828,271	169·1	2,342	167·01	158·13	177·13	954,243	847,579	106,664
1983	*7·14	*1,994,351	190·8	*2,444	*170·04	156·27	179·54	*1,099,448	*923,520	*175,928
1984	11·74	533,392	—	645	173·81	156·71	177·54	281,177	235,235	45,942

First quarter)

Table 1 (*cont.*)

	Domestic Demand			*Finance*			*Labour*			*Population*
	Government Consumption Expenditure	*Private Consumption Expenditure*	*Gross Capital Formation*	*Tax Revenue*	*Money Supply* ⑩	*Rediscount Rate of CBC* ①	*No. of Mfg. Employed* ②	*Aver. Mon. Earnings per Mfg. Employee* ②	*Unemployment Rate* ②	
	million NT$			*million NT$*		*Per annum*	*Thousand persons*	*NT$*	*%*	*Thousand Persons*
1951	2,161	8,898	1,779	1,416	914	41·40	347	—	4·52	7,869
1952	2,900	12,676	2,643	2,363	1,311	39·60	362	253	4·37	8,812
1953	3,518	17,307	3,224	2,963	1,654	31·65	381	316	4·20	8,438
1954	4,551	18,602	4,041	4,006	2,096	21·60	392	352	4·00	8,749
1955	5,595	21,540	3,998	4,498	2,523	21·60	411	396	3·81	9,078
1956	6,877	24,177	5,524	5,479	3,161	19·95	415	447	3·64	9,390
1957	7,953	27,684	6,355	6,455	3,740	18·00	433	465	3·73	9,690
1958	9,173	30,918	7,458	7,281	5,041	17·40	471	494	3·80	10,039
1959	10,572	35,502	9,732	7,989	5,486	16·05	500	530	3·88	10,431
1960	11,832	42,422	12,618	9,241	6,037	15·00	514	621	3·98	10,792
1961	13,314	47,345	13,983	9,559	7,699	17·12	525	755	4·10	11,149
1962	15,241	51,905	13,733	11,053	8,086	12·96	534	794	4·17	11,512
1963	16,189	55,683	15,950	11,871	10,355	12·24	551	827	4·26	11,884
1964	17,752	63,860	19,089	13,924	13,979	11·52	564	844	4·34	12,257
1965	18,998	70,918	25,546	15,869	16,194	11·52	612	914	3·34	12,628
1966	21,882	76,473	26,736	18,401	18,170	11·52	643	971	3·12	12,993

1967	**25,643**	**86,622**	**35,882**	**21,433**	**23,637**	**11·04**	753	1,101	2·31	13,297
1968	**30,460**	**100,901**	**42,624**	**27,760**	**26,360**	**11·25**	748	1,232	1·72	13,650
1969	**36,188**	**112,957**	**48,219**	**35,587**	**30,472**	**11·16**	833	1,375	1·86	14,335
1970	41,189	126,734	57,886	38,979	35,042	10·77	933	1,553	1·70	14,676
1971	45,065	141,515	69,179	43,352	45,756	9·48	1,023	1,713	1·66	14,995
1972	50,188	163,288	81,082	53,383	61,357	8·88	1,194	1,990	1·49	15,289
1973	61,188	205,210	119,373	72,187	92,268	9·17	1,412	2,525	1·26	15,565
1974	76,069	296,213	215,325	96,696	101,922	13·33	1,468	3,389	1·53	15,852
1975	91,170	333,583	179,047	108,299	131,227	11·06	1,501	4,029	2·41	16,150
1976	105,563	364,061	216,231	130,155	164,103	10·59	1,607	4,707	1·48	16,508
1977	126,216	417,736	232,195	150,955	219,188	8·66	1,735	5,544	1·31	16,813
1978	145,856	481,733	277,592	191,176	300,213	8·25	1,901	6,391	1·67	17,136
1979	179,382	582,072	392,142	239,521	323,417	9·58	2,081	7,578	1·28	17,479
1980	232,356	737,388	492,769	288,325	396,862	11·00	2,149	9,198	1·23	17,805
1981	280,028	883,100	501,863	329,749	451,560	12·45	2,158	11,024	1·36	18,136
1982	316,377	956,003	450,423	330,816	521,901	9·93	2,152	11,942	2·13	18,458
1983	*332,417	*1,030,199	*454,055	*354,936	615,308	7·30	2,268	12,734	2·79	18,733
1984 (First quarter)	89,688	289,857	106,049	93,219	—	—	—	—	—	—

Notes:

①. Money supply is year-end (or quarter-end) data, those after 1961 are from *Financial Statistics Monthly, Taiwan District, R.O.C.*, revised by Central Bank of China. Rediscount rate was annual average, the rates in 1951–60 were Bank of Taiwan's rediscount rate.

②. Manufacturing employment and unemployment rate were provided by Labor Force Survey and Research Institute and DGBAS, Executive Yuan: while average earnings were from *Monthly Bulletin of Labor Force Statistics*, R.O.C., DGBAS.

③. Data before 1981 are urban consumer price index.

* Yearly figures were estimated in November 1983, figures of the fourth quarter were newly estimated.

Source:

Directorate-General of Budget, Accounting and Statistics, Executive Yuan, Republic of China, *Quarterly National Economic Trends Taiwan Area, The Republic of China* (24), February 1984; Population data obtained from Council for Economic Planning and Development, Taiwan Statistical Data Book 1983, p. 4.

Table 2: **Selected Annual Growth Rates for Economic Trends** (%)

Period	GNP*	Per Capita Income†	Agriculture‡ General	Agri-culture	Forest	Fish.	Live-stock
1953–62	7·3	3·6	4·8	3·7	8·2	8·6	7·2
1963–72	10·9	8·1	4·0	2·8	1·9	9·5	7·1
1973–82	7·3	4·3	2·0	0·7	−7·9	5·2	6·2

Period	Industry§ Gen.	Mining	Man.	Elect., Gas, Water	Price‖ Wholesale	Consumer
1953–62	11·7	7·9	12·5	10·4	7·6	8·7
1963–72	18·5	6·0	19·8	14·1	1·8	2·9
1973–82	9·8	−2·4	10·1	8·8	10·3	11·9

Notes:
* For GNP, p. 24.
† For per capita income, p. 30.
‡ For agricultural production, p. 60.
§ For industrial production, p. 77.
‖ For prices, p. 165.

Source: Council for Economic Planning and Development, Executive Yuan, Republic of China, *Taiwan Statistical Data Book 1983*.

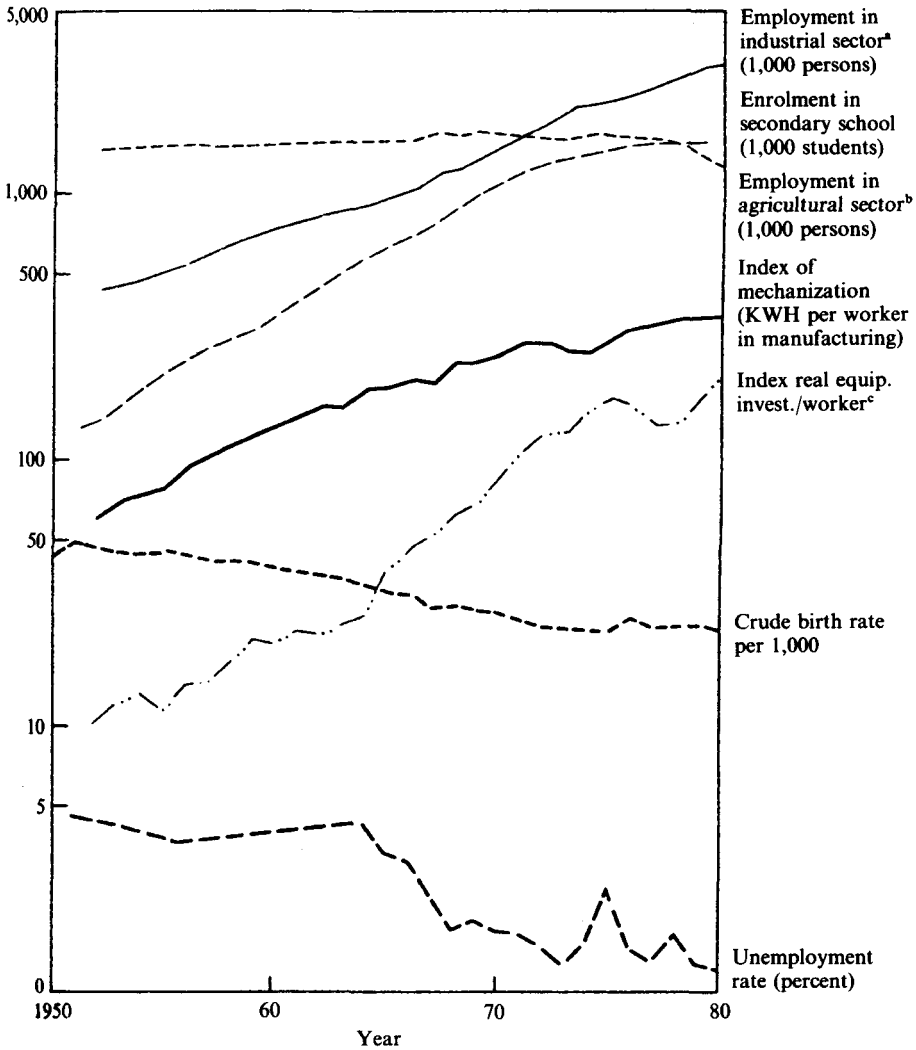
decade, from the ravages of the Second World War. Only 36,000 square kilometres in area and just slightly smaller than Holland, in 1982 the island's population density was 512 persons per square kilometre – 60 per cent higher than South Korea's and considerably higher than that of Japan, Puerto Rico, Belgium and Holland.[3]

Economic Growth. Taiwan's gross national product in real terms grew at an annual rate of 8·3 per cent between 1952 and 1965 and 9·0 per cent between 1966 and 1982.[4] In terms of decades, GNP grew at 7·6 per cent annually in the 1950s, 9·6 per cent in the 1960s and 9·5 per cent in the 1970s. Although slow economic growth was infrequent before 1980, between 1980–81 and 1981–82 the economy declined 5·0 and 3·8 per cent, respectively, because of the world recession. In 1983, however, it registered a 7·1 per cent leap and was projected to be around 10 per cent in 1984 to raise per capita income to roughly US$3,000.[5]

All economic sectors have rapidly expanded their output of goods and services, except for the agricultural sector, which slowed down between 1966 and 1982. For the 1952–82 period, agriculture, industry and services registered annual growth rates of 3·7, 13·3 and 12·5 per cent, respectively.[6]

3. Council for Economic Planning and Development, Executive Yuan, *Taiwan Statistical Data Book 1983* (hereafter, *TSD 1983*) (Taiwan: Executive Yuan, 1983), p. 283.
4. *Ibid.* p. 22. Calculated from data presented. See Tables 1 and 2.
5. *Zhongguo shibao*, 10 May 1984, p. 1.
6. *TSD 1983*, p. 33. Calculated from data presented. I will refer to agriculture, industry and services as categories representing the primary, secondary and tertiary sectors. Industry

Figure: **Trends in Employment, Fertility, Education and Mechanization in Taiwan, 1950–80.**



Notes:

[a] Industrial sector includes mining and quarrying; manufacturing; construction; public utilities; transport; storage and communication.

[b] Agricultural sector includes farming, livestock, hunting, forestry and fishing.

[c] Investment refers to the concept of flow, not stock.

Source:

Reprinted with the permission of the Population Council from Harry T. Oshima, "The industrial and demographic transition in East Asia," *Population and Development Review*, Vol. 9, No. 4 (December 1983), p. 589.

Dividing this 30-year period into two phases, for 1952–65 agriculture, industry and services grew at the growth rates of 5·0, 12·5 and 10·4 per cent, and between 1966 and 1982 at the growth rates of 2·4, 13·7 and 15·2

includes mining, manufacturing, public utilities and construction, whereas services denote transport, communications, commerce and other activities. See Table 2.

per cent, respectively. It is noteworthy that industry and the service sectors experienced accelerated growth.

Structural transformation over the same period has also been rapid. Agriculture's contribution to net domestic product fell from 35·9 to 8·7 per cent, industry rose from 19·0 to 43·9 per cent, and services rose slightly from 46·1 to 47·5 per cent.[7] Reflecting this same sectoral change was the redeployment of labour from the primary to secondary and tertiary sectors. Between 1952 and 1982 the average percentage of employment in primary industry fell from 56·1 to 18·9 per cent of the total workforce.[8] For that same period labour's share in industry rose from 16·9 to 41·2 per cent. Although the contribution of net national product by services barely rose over this period, that sector provided employment for nearly 800,000 persons in 1952 and for over 2·7 million in 1982.[9]

During such a rapid transformation of the economy, the adjustment that must accompany the redeployment of resources would usually be associated with enormous inflationary pressures. In Taiwan that was not the case. Economic fluctuations were mild, and the consumer price level only reached a double digit annual increase for a few years in the 1970s after rising oil prices had unexpectedly reverberated across the economy.[10] Between 1953 and 1962 consumer prices only expanded 8·7 per cent annually, dropping to 2·9 per cent between 1963 and 1972, then rising to 11·9 per cent between 1973 and 1982.[11]

Even though the economy grew very fast and its structure of economic activity changed rapidly, the population continued to increase relentlessly. By the late 1940s the island's population was already expanding at over 3 per cent per annum because of the demographic revolution initiated by the Japanese colonial regime. The influx of nearly two million mainlanders between 1945 and 1950 also placed extraordinary pressures upon a burdened post-war economy. It was no surprise, therefore, that in 1952 the 8·1 million population began to expand even more rapidly at an annual rate of 3·5 per cent and only began to slow down in 1963–72 when urbanization rapidly increased and government programmes to encourage later marriage and family-planning began to take effect.[12] It was not until 1984, when the population stood at nearly 19 million, that the growth rate finally had dropped to 1·5 per cent; and it is still not clear if it will fall below 1·0 per cent before 1990, when the population will probably exceed 20 million and begin to assume a density on a par with that of Hong Kong. In spite of this doubling of population between 1951 and 1973, the rate of unemployment in the early 1950s was only a little over 4·0 per cent per year and then declined to less than 2·0 per cent for the entire 1970s, except in 1975.[13] Even in the recent recession, the worst since the late 1940s,

7. *Ibid.* p. 34.
8. *Ibid.* p. 16. See Figure.
9. *Ibid.* p. 15.
10. *Ibid.* p. 2. In 1974 consumer prices rose 47% and again rose 19 and 16%, respectively, in 1980 and 1981.
11. *Ibid.* p. 165.
12. *Ibid.* p. 4. Calculated from data presented. See Figure.
13. Council for Economic Planning and Mobilization, Taiwan Provincial Government, *Taiwan Economy*, No. 87 (25 March 1984), p. 119. See Figure.

unemployment between 1981 and 1983 never rose above 3·0 per cent per year.

Income Distribution. In view of these growth rates and the rapid structural change, the trend towards an equal distribution of income at a much lower per capita income level than in more advanced countries is impressive. Measuring income distribution is difficult because the same households are rarely sampled again over time. But the data collected so far show that income distribution probably became much more equal during the 1950s, and then only slightly equal when the Gini coefficient dipped from 0·360 to 0·303 between 1964 and 1980.[14] The rapid decline in income inequality in the 1950s is hardly surprising because of the land reform. The more gradual income inequality decline for the next two decades was due to the enormous migration of rural population to the cities, a process that normally increases income inequality.

Yet another way of looking at the issue is to compare the income shares going to the richest and poorest one-fifth of the households. In 1953 the income share of the richest 20 per cent of households was 61·4 per cent but had declined to 51·0 per cent by 1959–60, 38·7 per cent in 1970 and 36·9 per cent in 1980.[15] Meanwhile, the income share going to the poorest 20 per cent of households constituted only 3·0 per cent in 1953, rising to 5·8 per cent in 1959–60, 8·4 per cent in 1970 and 8·8 per cent in 1980.

Taiwan's steady progress towards more equal income distribution certainly has been better than that achieved by other developing countries. Between 1965 and 1972 Taiwan and South Korea posted the lowest Gini ratios for countries with comparable per capita income in Asia.[16] Similar data for 1972 showed that these two countries again had the lowest Gini ratios in Asia even though their per capita incomes were lower than for Hong Kong, Singapore and Japan.[17] When Taiwan is also compared with other less developed countries for the years prior to 1971, she ranked highest among them for having the most rapid growth of income for those recipients of the lowest two-fifths of the population.[18]

Although Taiwan's small size might account for much of its success in reducing income inequality, no methodology has convincingly related the trend for income distribution merely to a nation's size. Probably more important than size for narrowing the gap between rich and poor was Taiwan's success in generating rapid employment for its labour-surplus economy of the 1950s. Three major developments made that possible: the enormous growth of urban industry in the 1960s and after; the expansion

14. *Kuo, The Taiwan Economy in Transition*, p. 95.

15. *Ibid.* pp. 96–97. Other economists have argued that the trend towards a more equal income distribution did not begin until the late 1960s. See Chang Yan-yu, "Economic growth and income disparity in Taiwan, 1953–1975," in Editing Committee of the Essays of Dr Chang Han-yu (ed.), *Economic Development and Income Distribution in Taiwan* (Taipei: Sun Ming Books Co., 1983), pp. 112–37.

16. Lee Sheng-yi, "Income distribution, taxation and social benefits of Singapore," *The Journal of Developing Areas*, No. 14 (October 1979), p. 78.

17. *Ibid.* p. 79.

18. Michael P. Todaro, *Economic Development in the Third World*, 2nd edit. (New York: Longman Inc., 1981), p. 135.

of services in both the countryside and cities; finally, the spread of small-scale manufacturing into the countryside during the 1960s and after.[19] Interestingly, the phenomenon last mentioned has yet to occur throughout South and South-east Asia, although it was characteristic of pre-Second World War Japan. But the most salient factor making these three developments possible was the extraordinary growth of productivity in the economy.

Productivity. The driving force behind rapid sectoral rates of growth and the rapid deployment of resources, particularly for labour, was the remarkable growth of factor productivity during this 30-year period. Enterprises, both public and private, have been producing more goods and services with fewer resources. This development has been confirmed by the numerous studies of economic productivity. In view of the fact that all concepts of productivity are controversial and that the standards for identifying and measuring productivity trends have yet to be fully agreed upon, these studies show that factor productivity, or technical progress, has so far played an enormous role in making possible the rapid transformation of the economy. Rising productivity, after all, makes it possible for enterprises to use more resources for creating additional capacity to expand output. It also enables an economy to free scarce resources for creating new productive activities so that even more employment and income can be generated. On Taiwan, rising productivity and expanding employment took place simultaneously.

The key to this high productivity growth has not only been the creating of new capital and the accompanying new technology. Capital also has continuously been combined with labour in more standardized, specialized tasks, so that both capital and labour productivity have risen rapidly. Moreover, this process has been repeated in all areas of industry and agriculture.

We now know, first, that technical progress accounted for half, and for the 1950s and 1960s, more than half of the growth of output over this near 30-year period.[20] In the 1950s the rapid advance of technical progress was especially conspicuous in manufacturing when considerable new capital and modern technology were adopted.[21] In the 1960s an even greater

19. J. T. Shih, "Decentralized industrialization and rural nonfarm employment in Taiwan," *Industry of Free China* (August 1983), pp. 1–20. Hong-chin Tsai, "Rural industrialization in Taiwan: its structure and impact on the rural economy," *Industry of Free China*, Vol. 56, No. 6 (25 December 1981), pp. 17–32; D. L. Chinn, "Rural poverty and the structure of farm household income in developing countries: evidence from Taiwan," *Economic Development and Cultural Change*, No. 27 (January 1979), pp. 283–301; A. R. C. Low, "The effect of off-farm employment on farm incomes and production: Taiwan contrasted with Southern Africa," *Economic Development and Cultural Change*, Vol. 29, No. 4 (July 1981), pp. 741–47.

20. See Edward K. Y. Chen, "Factor inputs, total factor productivity, and economic growth: the Asian case," *The Developing Economies*, Vol. 15, No. 2 (June 1977), p. 126.

21. Xing Mohuan, "Guanyou celiang (jixu biandong) di yixie jiben kaoliu" ("Some basic considerations of measuring 'technical change,'" *Jingji lunwen*, Vol. 6. No. 1 (March 1978). pp. 1–10. In the 1950s it seems that as capital deepening occurred, technical change was labour-saving and labour became more efficient in manufacturing. See also Fu Yue, "Minguo sishinian zhi wushiwunian Taiwan zhizaoye bumen jixu jinbu zhi ceding" ("Estimating technical progress in Taiwan's manufacturing sector for the period 1951–66"), *ibid.* (October 1970), pp. 1–22.

number of firms than in the previous decade began substituting capital for labour and vice versa, partly because the scale of their operations, either small or medium, made the adoption of advanced technology that could still be used for labour-intensive production particularly suitable.[22]

Secondly, late in the 1960s as rapid restructuring of the economy occurred and capital accumulation further increased, technical progress appears to have gradually declined in agriculture but began to accelerate in the late 1970s as new farm capital increased and farmers learned to utilize it more efficiently.[23]

Thirdly, when we examine only capital and labour productivity, it seems their separate growth rates in the industrial and services sectors were higher between the 1960s and the mid 1970s than thereafter. Even so, both secondary and tertiary sectors still had high annual rates of labour productivity growth between 1976 and 1981 of 3·2 and 3·0 per cent, respectively.[24] In agriculture, however, labour productivity grew more rapidly at 6·0 per cent annually in those years compared to only 4·5 per cent between 1961 and 1970. We must conclude, then, that while there have been fluctuations in the rate of technical progress in all decades, and especially for agriculture between the mid 1960s and mid 1970s, a substantial proportion of output increase originated from rising total factor productivity.

This rising productivity owed much to the growth of new capital accumulation. For example, in the manufacturing and services sectors, capital stock grew at the annual rate of 8·2 per cent between 1952 and 1980, with the most rapid expansion of 13 per cent annual growth taking place between 1965 and 1980.[25] The value of capital per worker doubled over this period, and the productivity of capital in both sectors greatly

22. Li Yongsan and Huan Guoshu, "Taiwan zhizaoye shengchan hanshu zhi hengpomian fenxi" ("A cross-sectional analysis of manufacturing production functions in Taiwan in 1966), *Jingji lunwen*, Vol. 3, No. 2 (September 1975), p. 135. For fluctuations in technical change see Liang Qiyuan, "Nongyuan jiage zhengze you Taiwan zhizaoye zhi jixu biandong" ("Technical change in Taiwan's manufacturing industry and energy price policy"). Table 1, p. 132, col. 5, in Institute of Economic Research. *Taiwan gongye fazhan huiyi* (*A Conference on the Development of Taiwan Industry*), 18–20 March 1983, Nankang, Academia Sinica. Liang's methodology and findings show that technical change was non-existent during the two years of the oil crisis in the early 1970s. Whether his model can accurately measure technical change on a year-to-year basis is naturally open to debate.

23. This assertion is based upon a recent unpublished study by Yueh-eh Chen of the Council for Agricultural Planning and Development titled, "Agricultural productivity measurement and analysis of Taiwan, the Republic of China," for the Asian Agricultural Productivity Conference, Tokyo, Japan (Sept. 1984). Miss Chen's findings show that total factor productivity accounted for 56% of agricultural production's growth between 1951 and 1966, then became negative for the years 1966–75, and then grew again to account for over 70% of output growth in the years 1975–81.

24. Wu Huilin and Wu Jiasheng, "Taiwan laodong shengchanli bianzhi zhi jiantao" ("An examination of labour productivity in Taiwan based on statistics published for manufacturing"), *Economic Paper*, No. 28, Chuang-hua Institute for Economic Research (July 1983), pp. 20–21. Similar findings were reported by Pei-chi Chang, "Productivity measurement and analysis in manufacturing industries in the Republic of China," *Industry of Free China*, Vol. 51, No. 2 (February 1979), pp. 2–21.

25. Calculated from data of capital stock figures, Table 3 of an unpublished manuscript soon to be printed as a monograph by the Institute for Studies of the Three People's Principles (Nankang, Academia Sinica): H. J. Duller, *Technique in Taiwan: The Role of Technology in Taiwan's Past and Present Development*. Also, See Figure.

increased after the early 1960s as reflected by a declining capital–output ratio. In agriculture, complex developments accounted for the slowing down of technical progress after the mid 1960s and its improvement after the mid 1970s. This was a period of restructuring when farmers began altering land use, adding more capital, and dispatching more rural labour for non-farm pursuits. Farmers needed more time to learn how to use their capital more efficiently. Changing consumer demand for farm products also forced farmers to begin diversifying their use of land to grow fruits, vegetables, aquatic products and livestock as major, marketable items.

The Process of Growth. The complex connections between rapid sectoral growth and change, more equal income distribution, and rising labour and capital productivity are components of economic growth. But how did that process take place? A number of major events, usually initiated by the state, stimulated economic activities that simultaneously caused resource redeployment without creating scarcity and bottlenecks that might impede economic growth or stagnation and decline that might derail it altogether. Each redeployment of resources from lower value-added to higher value-added production contributed both to the rapid expansion of income and output and the rapid transformation of the economy.

In the early 1950s a major restructuring of rural property rights first facilitated the transfer of rural capital to urban manufacturing, commerce and finance, and it improved the price and income incentives for farmers to increase their savings, invest more and market a higher surplus. These developments combined to increase the output of consumer goods and raw materials that generated enough income and demand to sustain the modest expansion of those infant industries that the state was protecting through its import-substitution policies. Some new technology also filtered from those budding industrial enterprises to other firms and helped them to become more productive and hire more labour. Under-employment in the cities and villages, therefore, never worsened because more new jobs in agriculture and services were always being created by small entrepreneurs. Meanwhile, wages greatly lagged behind profits so that enterprises had the incentive to increase capital investment. But even as income and output advanced, the demand for heavy industrial goods weakened because of their prevailing high prices; and by the mid 1950s the pace of industrial production slowed down.

In the late 1950s the government responded by liberalizing foreign trade and encouraging manufacturing export growth. High economic growth rates continued to be sustained, some even increasing slightly, as export value rose more than nine times compared to only four times in the 1950s.[26] Fuelled by this new expansion of the market, new industrial enterprises began springing up in the cities, small towns and in the countryside demanding labour. The new incomes generated from these activities, complemented by the increased spending of farmers who had paid their last instalments to own their land, led to even greater spending

26. *TSD 1983*, p. 186.

that exerted a favourable multiplier effect on the demand for new commercial, communication, financial and transport services, so that the tertiary sector also rapidly grew and provided more employment.[27] By the late 1960s this rapid expansion of manufacturing and services was absorbing so much labour from agriculture that wages finally began to rise, encouraging more manufacturing firms to substitute capital for labour. The enormous growth in capital investment, therefore, was made possible by the fact that as incomes rapidly rose, the rate of consumption advance did not rise as much but remained much the same as in the 1950s.[28] Agricultural output and productivity also continued to advance, so that major industrial costs, except for wages, did not rise excessively. The profits generated within enterprises also helped to finance the enormous capital investment. By the early 1970s Taiwan could boast a saving to income ratio of around 30 per cent compared to only 5 per cent in the early 1950s.[29] It is not surprising, then, that the termination of American economic aid in the mid 1960s produced no ill effects on the economy.

Government policies continued to remain crucial to facilitate export expansion and the domestic redeployment of labour and other resources needed in the late 1960s when the state promoted new industrial export zones to help stimulate export expansion. In the early 1970s exports continued to expand, and the government began to enlarge the infrastructure to accommodate new market changes that had taken place: constructed new ports, built new roads and a major airport, and created new industrial capacity in the public enterprises responsible for steel and petrochemical products. This surge of capital spending came when the infrastructure's supply of services began to fall behind demand. In the mid 1970s the government facilitated agricultural productivity by promoting the consolidation of farm land, and in the early 1980s encouraged the restructuring of manufacturing with policies to develop high technology and automobile parts industries.

All of these developments just mentioned, naturally, were made possible by the infusion of American economic and military aid, especially the former, to finance the import of necessary consumer goods, industrial materials, and foreign machinery and equipment in the 1950s to enable enterprises and farms to "transmute domestic saving into productive investment."[30] Without such aid the ROC Government would not have

27. A friend of the author, a foreign service officer in Taiwan during the 1960s, wrote the following in a personal letter: "I was in Taiwan when the farmers paid off their ten-year loans (giving them almost instantly a 37½ per cent increase in income). U.S. aid stopped in that year, 1966, I believe and we were concerned that this would have a bad effect on local confidence. In fact no one seems to have missed it, and the transition went very smoothly."

28. Between 1963 and 1972 the annual rate of gross capital formation increased at 14·6% compared to the annual growth of 7·3% for consumption spending. But between 1952 and 1962 the annual growth rate of gross capital formation was only 8·2% compared to that of 6·2% for consumption expenditures. Calculated from data in *TSD 1983*, p. 37.

29. In 1952 net savings as a fraction of national income at factor cost amounted to 5·2% whereas in 1970, 1971 and 1972 this had become 27·6, 31·6 and 35·0%, respectively. See *TSD 1983*, p. 49.

30. Neil H. Jacoby, *U.S. Aid to Taiwan: A Study of Foreign Aid, Self-Help, and Development* (New York: Frederick A. Praeger, Publishers, 1966), p. 153. Jacoby estimated

been able to maintain its large defence force of over half a million men and the over-all military costs which absorbed roughly 10 per cent of GNP and accounted roughly for 60 per cent of the national government's budget expenditures in that same period.[31] The developments of the 1950s and the policies enacted by government then, certainly set the stage for the economic boom of the 1960s and the sustained economic growth of the 1970s.

Between 1961–81 the rapid growth of foreign and domestic trade has made it possible for manufacturing output to expand 15 times compared to the doubling of agricultural output.[32] The export value of goods and services in 1981, which had been so crucial for the rapid growth of market demand, stood at 52 per cent of gross domestic product compared to only 14 per cent in 1961.[33] The service sector, nurtured by this expansion of trade and new infrastructure, also contributed 47 per cent of net domestic product in 1982 and employed 40 per cent of the workforce.[34] This rapid transformation of output and redeployment of labour had occurred within the context of various international crises and domestic difficulties.[35] It also had taken place in spite of the fact that the economy devoted roughly one-tenth of its gross national product to military defence, an extremely high burden to bear for a country with a per capita income of less than US$3,000. What kind of activities had firms and farms played? How important was the role of government?

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that without U.S. economic and military aid Taiwan's GNP in 1964 would have been only about 58% of the actual amount. Yet economic aid only averaged about 34% of Taiwan's total gross investment, so why were the effects of that aid so powerful? Jacoby contends that U.S. aid broke the crucial bottleneck of scarce foreign exchange during the 1950s and enabled the island-economy to import critical items for economic growth.

31. Ian M. D. Little has insightfully pointed out that "Taiwan could have grown as fast and have consolidated her economic infrastructure for further growth as well as she did if she had had less aid but a smaller defense budget." See Ian M. D. Little, "An economic reconnaissance" in Walter Galenson (ed.), *Economic Growth and Structural Change in Taiwan: The Postwar Experience of the Republic of China* (Ithaca and London: Cornell University Press, 1979), p. 458. Little further points out that the real contribution of foreign economic aid to a country's economic development depends upon government policies and their implementation. Much of his essay focuses exactly upon what those policies were and why they did contribute so much to Taiwan's successful economic development and progress.

32. Shi Jizeng, "Taiwan nonggongye fazhan zhi huhui guanxi" ("The interacting beneficial relationship between the development of agriculture and industry in Taiwan"), Economic Research Institute, *Conference on Taiwan's Industrial Development*, 18–20 March 1983. Nankang, Academia Sinica.

33. For data on the relationship of export value to GNP see *TSD 1983*, p. 36.

34. For data on the economic characteristics of the services sector see *TSD 1983*, pp. 16 and 34.

35. Most astonishing about this transformation was the huge shift of labour from villages to cities. Between 1965 and 1973 the annual growth rate of labour flowing out of agriculture and never returning averaged around 4–5%. These years proved to be the most rapid phase of out-migration from the rural sector in Taiwan's entire economic history. For evidence of this see Table 3 in Shi Jizeng, "Nonggong bumen gongzi chayi you laoli yidong: shuangxiang guangxi zhi chuli" ("Manpower mobility and the wage differential between the agricultural and industrial sectors: the adjustment mechanism"), presented at the *Conference on Taiwan Manpower Resources*, 21–23 December 1977, Institute of Economic Research, Academia Sinica, Nankang, Taiwan (p. 389).

The Private Sector

Describing Taiwan's rapid economic transformation, especially after 1960, is straightforward, but explaining it is another matter. We can, however, describe how markets worked and the activities of enterprises that made this transformation possible.

Firms and Entrepreneurs. An unusual feature of manufacturing and service firms in Taiwan is their limited size: each operation is usually owned by single proprietor or family. Despite a few giant companies like Tatung and Taiwan Plastics, firms neither behave like nor are as multifaceted as the corporate conglomerates like Hyundai in South Korea or Nissan in Japan. Highly competitive markets with easy access and departure enable many such firms to produce similar products and services. Their turnover rate is very high, with many business failures and entrepreneurs continually selling out and starting up new businesses. Pricing is cutthroat, with most firms operating as price-takers rather than price-setters and trying to keep their unit costs low while expanding sales either at home or abroad. Accordingly, technological diffusion is extremely rapid, with firms quickly imitating those they perceive as the new pacesetters, even ignoring foreign patents and copying foreign designs or brands without permission.[36] Technical creativity is rare, because firms have few reserves to spend on research and development. During buoyant market periods many firms will speculate on the property market; consequently, when deflation occurs many fail because they have used their bank loans improperly.[37] Experts assert that the ROC on Taiwan will have to improve management techniques and put an end to fraudulent accounting practices if it is to retain or increase its share in the world market. Yet it seems that it is precisely those characteristics, particularly when looked at in the context of foreign multinationals, which have provided the motive force for flexible change and the rapid growth of manufacturing and services. Take the example of industrial innovation and technological diffusion, probably the most important factors behind the rise in labour and capital productivity.

Before 1955 the plastic industry was non-existent, and the "first major foreign direct investor in plastics, a low density polyethylene plant, did not come to Taiwan until 1967."[38] But in 1957, when the government had expressed a desire to produce polymerization products of 100 tons per month, officials persuaded Mr Y. C. Wang, a successful businessman, to set up a factory. During the first two years Wang's company could not even produce a low cost product to sell abroad, but after building a second plant and increasing output to 1,200 tons per month unit costs became low

36. Taiwan manufacturing firms are notorious for imitating foreign products and marketing them worldwide under different brand names. A most recent example was the Paimex E35 camera, an imitation of the Japanese produced Hanimex 35 camera. See "Japan: fighting a copycat war," *Newsweek*, 23 April 1984, p. 27.

37. This practice was widespread in 1981–83 in Taipei, even being followed by reputable companies. For a good account see Andrew Tanzer, "The big bounce back," *Far Eastern Economic Review*, 22 March 1984, p. 60.

38. Wan-lin Kiang, "Technological change and industrial development: the plastic industry in Taiwan," *Industry of Free China*, Vol. 54, No. 3 (25 September 1980), p. 19.

enough to make that possible. Three other businessmen without any experience in plastics quickly built similar factories, and many more entered the industry later. Between 1957 and 1971 plastic production grew 45 per cent annually. In 1957 only 100 small farms fabricated products from plastic supplied by Wang's company, but in 1970 more than 1,300 small firms bought from plastic suppliers.

Before 1960 the electronics industry did not exist, but by 1978 over 1,000 Chinese firms produced nearly 10 per cent of the value of manufacturing and exporting as well. By 1983 the export value of electronic products exceeded that of textiles, giving it first place in Taiwan's manufactured exports. Again, small and medium firms predominated with half earning less than US$9·4 million each year, and they only spent 0·4 per cent of their sales on R & D compared to 8 per cent in Japan and between 5 and 8 per cent in the United States.[39]

New manufacturers of machine tools also developed in the 1960s with the encouragement of government assistance and direct foreign investment. In 1962 the government published new rules for machine tool development, set up an institute to train technicians, offered tax exemptions, and provided storage and factory facilities to encourage more businessmen to expand and improve machine tool making.[40] Overseas Chinese capital also helped establish some of these firms.

Multinational Enterprises. Between 1961 and 1970 the net long-term capital flow into Taiwan had more than doubled, and between 1970 and 1980 it rose another eight-fold to make up 9 per cent of the total investment during that decade.[41] While part of this went into the new export zones, all foreign investment accounted for around 4 per cent of the value added in manufacturing, around one-fifth of exports and 10 per cent of manufacturing employment.[42] In the 1950s overseas Chinese capital had largely flowed into construction and services and then gradually shifted into textiles and cement; in the 1960s and 1970s Japanese, American and European capital increased. Particularly relevant for founding new manufacturing was the adoption of the newest technology from these multinationals. Here are a few examples.

In 1982 Taiwan exported US$1.8 billion worth of computer compo-

39. Council of Economic Planning and Development, "Woguo dianzi gongye xiankuang you pinggu" ("The current conditions and an assessment of Taiwan's electronics industry") *Ziyou zhongguo zhi gongye*, Vol. 54, No. 2 (25 August 1980), p. 17. For information on R & D spending in this industry see part 2 of same article, Vol. 55, No. 3 (25 September 1980), p. 15.

40. Ji Shiji, "Jixie gongye di jixu zhuanyi" ("The diffusion of technology in the machine-tool industry"), *ibid.* Vol. 54, No. 3 (25 September 1980). pp. 2–11. For another example of such technological diffusion in the enterprises producing ball-bearings and bolts see Twu Rongyi and Chuang Chunfa, "Taiwan jixu lingjianye zhi jixu yinjin buji you shenggen" ("The origins, diffusion and adoption of technology in the machine spare parts industry in Taiwan"). *Taiwan yinhang likan*, Vol. 36, No. 1 (March 1984), pp. 64–107.

41. Cited from a draft copy of Gustav Ranis and Chi Schive, "Direct foreign investment in Taiwan's development," to appear in L. Krause (ed.), *Trade and Investment in Four Asian Countries* (forthcoming), Table 2. I am grateful for Dr. Chi Schive for sharing this information with me.

42. *Ibid.* Table 6. On the suggestion of Dr. Chi Schive I have used the weighted figure of foreign firms by ownership to measure the contribution of direct foreign investment which meant revising slightly the figures on Table 6.

nents, about 9 per cent of exports for that year. One of these, personal computer boxes (PCB), is now produced by a flourishing grassroots industry. Several managers and technicians had once worked for Ampex Taiwan, a subsidiary of U.S. Ampex, but they left to set up their own PCB factories. This new industry spread rapidly. PCB firms now turn out other components as well at costs 30 per cent lower than their counterparts in the United States. These same components have been widely used in the imitation Apple computers which have been under-selling their competitors abroad.[43]

Direct foreign investment really founded Taiwan's television industry. In 1962 there were 41 producers of televisions, but by 1979 of the 21 that had survived seven were foreign-owned firms, four joint-ventures and 10 Chinese. Of the marketed sales for all firms in 1979, Chinese firms only claimed one-fifth, and they exported about one-fifth of the black and white television sets they produced. One foreign firm that had developed a European colour television system lost its entire team to a local firm; many workers and managers employed by foreign firms would leave to join native firms. Since this industry also required thousands of small parts such as picture tubes, tuners, transformers, loudspeakers, coils and antennae, countless Chinese firms sprang up to supply these in ever greater quantities.[44] But in the past few years South Korean exports have decimated Taiwan's television industry because of the lower cost, superior quality colour sets produced there.[45]

Another interesting case of technological transfer is that of the Singer Sewing Machine Company, first set up on Taiwan in 1963 with capital amounting to US$800,000. The government approved this investment because it hoped Singer's investment would replace sewing machine imports, save foreign exchange and stimulate local industrial growth. It did all of these. By 1967 Singer's exports "used all locally made parts except needles for its straight stitch model."[46] During the 1960s Singer's exports grew at 12 per cent per year, and by 1976 it exported 86 per cent of total output with about four-fifths of that locally made. The company also offered training seminars, provided standard blueprints to its parts producers, supplied them with tools and fixtures, and gave technical assistance, mainly because Singer wanted to ensure that native firms adhered to its rigid specifications. Foreign firms like Singer used more foreign technology than their native competitors, but eventually some of that new technology filtered into Chinese firms and rapidly spread to others.[47]

43. Andrew Tanzer, "Asia plugs into the computer," *Far Eastern Economic Review*, 21 July 1983, p. 60.

44. Chi Schive and Ryh-song Yeh, "Direct foreign investment and Taiwan's T.V. industry," *Economic Essays*, Vol. 9, No. 2 (November 1980), p. 278.

45. Far Eastern Economic Review, "Taiwan" in *Asia 1984 Yearbook* (Hong Kong, 1984), p. 273.

46. Chi Schive, "Technology transfer through direct foreign investment: a case study of Taiwan Singer," *Proceedings of the Academy of International Business Asia–Pacific Dimensions of International Business* (Honolulu, Hawaii, 18–20 December 1979), p. 114.

47. This assertion is convincingly demonstrated and proven in Chi Schive, "Direct foreign investment and technology: theories and Taiwan's evidence," *Proceedings of National*

Joint-Ventures. Joint-venture companies also have stimulated innovation and initiated structural change, especially when the government took the lead. We have already cited plastics, and more recently the government sponsored a joint venture with Toyota after unsuccessfully trying to coax Taiwan's five car assembly manufacturers to integrate their operations. In 1983 ROC officials launched a new joint-venture with Toyota to assemble and eventually export 150,000 models by 1994 with another 150,000 for the home market.[48] To be capitalized at US$260 million by 1988, the government's share is represented by China Steel (25 per cent), followed by private companies like Formosa Plastics and Taiwan Cement (8 per cent each), Shin Kong and Cathay Pacific (4 per cent each) and Tatung, Weichuan and Sharp (2 per cent each). Critics charge that the project is too ambitious and adds more capacity to an industry already in trouble. The Ministry of Economic Affairs contends that this joint venture will restructure industry by forcing firms, ranging from steel and durable plastics to electronics, to join in building a "base for a vehicle-components industry which the government would eventually like to see export into original-equipment markets."[49]

By having this primary firm develop closer ties with a network of suppliers through long-term contracts, technical and managerial guidance, and equity interests, officials hope to integrate a large segment of Taiwan's manufacturing and upgrade its management and modernize production facilities. Whether this venture will succeed remains to be seen. But this strategy demonstrates the now familiar close state and private business ties so often used in Taiwan to help the competitive manufacturing market perform even better.

Export Zones and Other Institutions. Taiwan's manufacturing and services firms have also flourished in new institutional arrangements created by the government. Export processing zones, for example, were first set up in Kaohsiung in 1966 and soon followed by two more at Nantze and Taichung in 1969.

Occupying only 180 hectares of land, all three offered their joint-venture, foreign and Chinese firms exemptions from import tariffs, commodity taxes, a five-year corporate tax-holiday, and low cost loans to build factories without deed's tax. Although 116 factories have closed their doors between 1967 and 1970, new applicants totalling 262 still produce for export; and they exported about US$5.5 billion worth of goods, the equivalent of 70 per cent of the country's favourable balance of trade over that period.[50] The three zones attracted US$280 million worth of investment by 1979, but only 12 per cent of that came from Chinese

Science Council, Republic of China, Vol. 3, No. 4 (1979), pp. 455–58. Even though foreign multinationals behave as oligopolistic firms, technological transfer to local firms takes place and further diffusion then occurs to still other firms.

48. Patrick Smith, "The new world carmakers," *Far Eastern Economic Review*, 5 April 1984, p. 66.

49. *Ibid.* p. 66.

50. Kwei-jeou Wang, "Economic and social impact of export processing zones in the Republic of China," *Industry of Free China*, Vol. 54, No. 6 (25 December 1980), pp. 7–28.

firms. The zones produce electronic components, machinery, precision optics, plastics, leather, clothes, knitwear and leisure goods. Of the nearly 80,000 employees, 60,000 are women housed in modern multi-story dormitories near the factories. Although many of the same privileges formerly extended to these zones now have been given to firms outside, this new institution channelled foreign and domestic capital and entrepreneurship into export production with unqualified success.[51]

Because the economic fate of Hong Kong after 1997 is so uncertain, the ROC now hopes to make Taiwan a major financial centre in the Pacific Basin, and to that end, the government began developing off-shore banking units (OBUs). Other reasons, too, prompted this move. Since 1979 the government has encouraged local banks to open foreign offices to reduce the island-state's diplomatic isolation. "By setting-up OBUs, local banks will lend abroad (by on-lending the foreign currency deposits they take), and gain experience such as liability management, credit analysis and foreign-exchange dealing."[52] The government also offers these OBUs incentives to invest in Taiwan by exempting them from taxes and reserve requirements, allowing them free movement of funds into and out of OBUs, and relaxing telecommunication controls over their business dealings. So far 13 banks have opened branches overseas; for example, the Bank of Communications in the ROC recently received permission to set up a branch overseas in exchange for the Development Bank of Singapore being allowed to open a Taipei branch.[53] By mobilizing savings in other countries, government hopes these OBUs will transfer some of them to Taiwan.

Still another institution created to lubricate the private sector is the recently-opened International Investment Trust Company, which will serve as a vehicle for opening the Taiwan Stock Exchange indirectly to foreign investors.[54] Six local banks will hold a controlling share and manage a portfolio of listed shares for foreign investors. Accordingly, the government hopes to attract even more foreign funds to augment the large pool of floating capital already circulating.

Family Farms and Labour. Unlike the Housing Authority in Hong Kong, which has bought farm land at fixed prices and resettled the rural people in new government-built flats at low rents, the ROC Government has not interfered in the pricing of land in the countryside. Farm families can freely decide what to do with their wealth: whether to remain on the land, work part-time off the farm, or move to the cities.

51. An unqualified success, yes, but some scholars point out that high labour-turnover has plagued firms in these zones. See Wu Zhongji, "Gaoxiong jiagong chukouchu laogong lishilu zhizai yenjiu–minguo liushiyinian zhi minguo liushiqinian di shizheng fenxi" ("A further study of labour turnover in the Kaohsiung export processing zone"), *Jingji lunwen zongkan*, No. 11 (May 1983), pp. 33–60.

52. Andrew Tanzer, "Taipei's off-shore allure," *Far Eastern Economic Review*, 10 March 1983, p. 38.

53. *Ibid.* p. 38.

54. Andrew Tanzer, "New route into Taiwan," *Far Eastern Economic Review*, 28 July 1983, pp. 70–71. For a good commentary on the recent "boomlet" in the Taiwan Stock Exchange see Andrew Tanzer, "A managed boom," *Far Eastern Economic Review*, 22 March 1984, pp. 63–64.

Although more land is now cultivated than in 1952 and the number of farm families in 1982 (803,819) exceeds that of 1952 (679,750), in 1982 agriculture's share of exports (18·9) and of the net national domestic product (9·2) was at a far lower level than it had been in either 1952 or 1965.[55] Furthermore, the countryside would be teeming with more people if the great urban migration of the 1960s and 1970s had not taken place. Between 1964 and 1973, at the height of the migration, the population in the five largest cities rose 48 per cent while increasing only 3 per cent elsewhere.[56] In the 1970s alone half of the annual population growth in Taipei came from in-migration.[57] This huge migration, moreover, never produced the urban blight and poverty so prevalent in many developing countries today. Further, these rural labourers greatly improved their social status and economic welfare by making the move.[58] Moreover, they were employed, and unemployment was exceptionally low. These new urban families had financed their resettlement as well as upgrading their skills to move into new occupations; those families remaining behind continued to produce enough farm output to more than meet the demands of this growing economy. But now new difficulties exist.

Family farms now obtain only 33 per cent of their income from farming; about nine out of 10 farm households work part-time.[59] The social unit managing the farm also is becoming older. Farmers complain that farm prices are often too low to cover costly part-time workers. Consumer demand has changed so that, for example, rice consumption, which was only 96 kilogrammes/capita per year in 1982, is expected to decline by 1·8 kilogrammes each year over the next 10 years, thus further lowering consumer demand for rice.[60] Because farmers are still a political

55. For data on number of farm families and the area of cultivated land see *TSD 1983*, p. 58 and for 1982 data on importance of agriculture in exports and net domestic product see Council for Agricultural Planning and Development, Executive Yuan, *Basic Agricultural Statistics Republic of China* (Taipei, March 1983), pp. 1–2. For related comments on the differences between agriculture in the early 1980s and the early 1950s see Andrew Tanzer, "Roots of trouble," *Far Eastern Economic Review*, 19 November 1982, p. 74. See also Yi-chung Kuo and Tso-kwei Peng, "Land tenure systems and farm mechanization in Taiwan," *Industry of Free China*, Vol. 59, No. 6 (25 June 1983), pp. 1–12 for a good review of the new farming conditions as of 1980 compared to the 1950s and early 1960s.

56. About two-fifths of the residents in both large and small cities in 1973 supposedly came from rural areas. See Ming-cheng Chang, "The economic adjustment of migrants in Taiwan," *Industry of Free China*, Vol. 51, No. 3 (25 March 1979), p. 29. In 1973 Taiwan's population was already 15·5 million. Assuming that the urban share of total population was around 55% or 8·5 million, that would imply that by 1973 nearly 3·8 million people had probably moved to the cities after the Second World War. There is a rich literature on Taiwan's demographic trends and conditions in recent decades, much of which can be found in the recently published work, *Economic Development in Taiwan: A Selected Bibliography* (Taipei: Center for Quality of Life Studies, 1984).

57. Tsay Ching-lung, *Employment and Earnings of City-Ward Migrants: A Study on Individual Outcomes of Migration to Taipei* (Nankang, Taipei: The Institute of Economics, Academia Sinica, 1981), No. 18 Monograph Series, p. 14.

58. *Ibid.* Ch. 5. Tsay also found for his Taipei study that an unusually high proportion of employed in Taipei service activities were migrants.

59. See *Basic Agricultural Statistics Republic of China, 1983*, p. 36 for sources of rural household income.

60. *Ibid.* p. 39. Miss Ch'en of the Council for Agricultural Planning and Development, Executive Yuan, informed me of the estimated annual 1·8 kg rice consumption decline for the 1980s.

force, the government remains sensitive to their moods and needs, and pays rice farmers (in kind) the cash equivalent of US$370 to 506 per hectare not to grow rice, their subsidy costing the government millions of dollars each year.[61]

The government estimates that by the year 2000 there should only be around 610,000 people employed in agriculture and producing about 3 per cent of GNP.[62] Its plan now is to create 80,000 modern farms equipped with machines and advanced technology to supply the country's agricultural demands. Officials intend to designate certain households to serve as this contingency force, and the government has begun to offer low-cost loans to encourage them to buy neighbouring land. This will be a difficult task because of the increasing scarcity of land, which in escalating prices, encourages the farmer not to sell. Also responsible, to some extent, for the farmer wishing to retain his land is the cult of ancestor worship, which is still deeply engrained in the hearts and minds of rural people.

The unprecedented rural migration of recent decades now means that 75 per cent of the total population live in cities which provide work for 80 per cent of the labour force.[63] The huge, free-floating workforce that moved from villages to towns has somehow managed to find work in both industry and services. It remains non-unionized, much of it self-employed, constantly on the move, but it is also highly educated, strongly motivated to achieve, well-disciplined to work long hours, and extremely frugal in not spending much of what it earns. The powerful bonds of family and kin have enabled families to pool their savings and help their members to move to the cities, find work and start new enterprises.

Interestingly, the proportion of industrial establishments in the five largest cities remained unchanged at 37 per cent of the total between 1951 and 1971, probably because much of that manpower found employment in labour-intensive services.[64] Between 1960 and 1970 the services sector employed from 1·0 to 1·6 million workers, and its share of the total workforce rose from 29·3 to 35·3 per cent to employ almost as many workers as did manufacturing.[65] That same trend continued into the early 1980s.

Services. Visitors to Taiwan are generally impressed by the intensive competition in services, and the proliferation of small establishments, street vendors and taxi cabs. Most of these workers have roots in the village. Competition among them is rampant each day; some prosper and some fail, while others hold their own and even diversify. But few ever become large scale and incorporate, although a few large, modern department stores are now beginning to flourish in every major city. Each new innovation in services like the large retail store brings outcries of

61. These monetary estimates of rice-in-kind subsidies to rice growing farmers were provided to me by Miss Ch'en.

62. Announced in *Zhongguo shibao*. 1 May 1984, p. 1.

63. *Basic Agricultural Statistics Republic of China, 1983*, p. 12.

64. Paul K. C. Liu, "Factors and policies contributing to urbanization and labor mobility in Taiwan," *Industry of Free China*, Vol. 59, No. 5 (25 May 1983), pp. 4 and 18.

65. *TSD 1983*, pp. 15–16.

derision and resistance from competitors, but the government has refused to intervene and offer protection. The small family shop, therefore, will coexist with the large department store.

Because the service industry employs 40 per cent of the workforce and produces nearly half of the net domestic product in 1982, it, too, is a dynamic, ever-changing market system. Shirley Kuo has found that the growth rate of value added in that sector was nearly as high as that of manufacturing between 1957 and 1981, and the annual price increase even "slightly slower than that of NDP during 1957–61."[66] Of course, the abundance of labour enabled firms in services to keep their costs low; but between 1966 and 1971 rising wages reversed the picture and the annual price increase for services was higher than the other two sectors. Not surprisingly, small enterprises employ most of the workforce and generate most of the wage income. In the mid 1970s, in the commercial sub-sector of services, firms having less than nine workers employed 70 per cent of the workers and produced two-thirds of the wage income.[67] It seems that services are also strongly linked to other sectors, for their sales and revenue greatly fluctuate in response to economic conditions in agriculture and industry.

The State and Public Sector

The Chinese on both sides of the Taiwan Straits take ideas very seriously. Just as Mao's ideas dominated for so many years in Mainland China, so, too, have the ideas and doctrines enunciated by Sun Yat-sen served as a beacon light for policy-makers to draft economic programmes and implement them.

Sunist Doctrine and Economic Policy. From Sun's ideas, leading officials and technocrats have devised a strategy of economic policy-making and implemention which defies easy conceptualization, but it can be described rather simply in the following terms. To make society prosperous, there must be both industrial and social change, so two complex and integrated processes must take place. Rather than allow the free market forces of supply and demand or the dictates of central planners entirely to direct the flow of resources and determine various economic activities, there must be planning within the context of a free economy (*jihuaxing di ziyou jingji*).[68] Although there are no rigid rules for such planning, government and its leaders have a responsibility to nurture the private sector according to some general principles.

First, most resources in society should be privately owned and managed through the market place according to traditional values, except for those

66. Shirley W. Y. Kuo, *The Taiwan Economy in Transition*, pp. 244–45.

67. *Ibid.* p. 261.

68. Wei Nuo, "Minsheng zhuyi di jingji moshi" ("The economic model for people's livelihood"), *Zhonghua xuebao*, Vol. 8. No. 2 (July 1981), p. 134. There is an enormous literature in Chinese devoted to Sunist writings, much of it relevant to how government policy should relate to Sun's Principle of People's Livelihood. Few western scholars have really examined these writings.

resources and activities which government deems necessary to manage on behalf of society, such as defence, communications, transport and certain social services. Secondly, policies should produce sustained, high economic growth under conditions of stability. Thirdly, new wealth should not be created at the expense of others; but as benefits accrue to primary parties, similar benefits should flow to society. Fourthly, economic change should be balanced, averting scarcities or disproportionate growth of industrial sectors.

While these principles may raise more questions than they answer, we can nevertheless observe a certain administrative style of economic policy-making on Taiwan by ROC officials that can be characterized as pragmatic, moderate, experimental and enlightened.[69] More specifically in terms of the policies themselves, we can point to three categories of state economic policies that have been used over the past three decades. These are: policies to alter the structure of economic incentives; policies to induce more competition and channel the flow of economic activity in new ways; and policies to achieve equilibrium within the economic system. All three categories, needless to say, strongly influenced the reallocation and use of resources in the economy. Here are some examples which played a key role in facilitating Taiwan's rapid economic transformation.

As incentives to resource reallocation, the government greatly raised interest rates for bank deposits in 1950 to reduce inflationary demand and induce higher savings. In 1953 landlords were paid in bonds to relinquish land of more than 1·7 acres of paddy and 7·2 acres of dry land so they could reinvest their proceeds in urban industry and services. A foreign investment law in 1954 for foreigners and another in 1955 for overseas Chinese offered favourable conditions for direct investment in Taiwan without fear of nationalization and made provision for the transfer-out of earnings.

As for policy to spur competition and reallocate resources to higher paid uses, the 1953 land reform extended private property rights to farmers by allowing them to buy their land over a 15-year period at low interest rates. As farmers had to pay for their land while trying to improve their living standards, they were induced to manage it efficiently, allocate it to its highest paid use, and expand their marketed surplus.

By 1953 the traditional textile industry was over-producing and could not compete overseas in the synthetic textile market.[70] Government officials believed that the ROC should have modern factories producing artificial fibres. So in order to restructure and modernize the textile industry, they encouraged leading manufacturers to pool their funds, and with some American capital they built a new plant in Miaoli in 1957 to produce viscose rayon. With capital of around US$1 million the Artificial Fiber Corporation became the first company manufacturing synthetic

69. Pang Linhan, "Zong Sanminzhuyi di texing tan qi shidai yiyi" ("The modern significance of the special characteristics of Sunist thought"), *Zhongguo wenxue yuekan*, No. 52 (February 1984), pp. 86–100. See also K. T. Li, "Implementation of the principle of livelihood in Taiwan," *Industry of Free China*, Vol. 55, No. 6 (25 June 1981), pp. 2–16.

70. F. J. Leu, "The present and future of artificial fiber industry in Taiwan," *Industry of Free China*, Vol. 12, No. 2 (25 August 1959), pp. 5–18.

fibres for both home and abroad. Other manufacturers soon followed, and this industry was eventually to become a leading export earner of foreign exchange.

Manufacturers like Artificial Fiber Corporation received a big boost in the late 1950s to expand output and export when the government reformed the foreign exchange control system. Beginning on 12 April 1958 the government simplified the multiple exchange rate system. By 1959 it had been transformed into a single exchange rate system; import restrictions had been greatly relaxed; and importers were allowed to buy freely from abroad within a list of permissible items as dictated by market demand.[71] At first, export prices rose more rapidly than import prices, but very quickly a host of manufacturing firms dependent upon imports were taking advantage of cheaper materials on the world market and selling to exporting firms or expanding their own exports.

Export zones became another means of government influence on manufacturers to produce for the world market, and the incentives lavished on Chinese and foreign firms alike successfully attracted many firms. In July 1979 the government followed with a similar scheme to establish a 210-hectare park only 45 miles south-west of Taipei, in Hsinchu, for Chinese and foreign computer firms. Located near several major universities and institutes, the "park will operate as a bonded, duty-free area with a computerized inventory control system rather than a physical wall at the boundary."[72] The Park began taking applications from firms to make mini-computers, integrated circuits and laser optics. Through the joint ventures and direct foreign investment in the Park, the government hopes to develop a new high technology capability in Taiwan as well as stimulate local industry to modernize and supply parts for the Park.

Finally, concerning policies designed to achieve economic equilibrium, in 1974 the government drafted the Ten Major Development Projects for completion by 1979.[73] Officials regarded these projects as necessary for the expansion of the economy's infrastructure, because private investment in capital formation during the 1963–72 period had out-paced that of public investment. These projects involved building a north–south freeway, electrifying the railway system, constructing a new international airport, establishing a nuclear power plant, an integrated steel mill, a giant shipyard, and building a new Naptha cracking plant for the state-run

71. K. Y. Yin, "A review of existing foreign exchange and trade central policy and technique," *ibid.* Vol. 12, No. 5 (26 November 1959), pp. 2–21. Yin Chung-jung was probably the most brilliant technocrat-official of the 1950s. He was largely responsible for persuading key government officials to reform the foreign exchange system in order to orientate Taiwan's economy to the world market. Further, he was responsible for bringing other technocrats into government like K. T. Li who masterminded a number of brilliant government policies like the export zones and the high-technology park at Hsinchu.

72. K. T. Li, "Up-grading of science and technology in Taiwan," *ibid.* Vol. 54, No. 2 (25 August 1980), p. 3. The 1983 policy of launching a joint-venture with Toyota, predictably pushed by the Ministry of Economics, is still another example of exerting leverage in the economy to achieve a new integration and up-grading of technical and managerial skills amongst manufacturers.

73. See W. A. Yeh, "The ten major development projects and Taiwan's economic development," *ibid.* Vol. 51, No. 4 (25 April 1979), pp. 8–23.

Chinese Petroleum Company, as well as expanding the productive capacity of existing petrochemical companies.

Immediately after these had been completed, in 1979, the government announced that 12 more such projects, costing around US$7 billion, would be completed by the end of the 1980s.[74] In the area of energy, too, the government has attempted to match projected growth of demand with potential supply. By 1989 the ROC Government hopes to reduce the island's share of oil imports as a source of total primary energy supply (currently running at around 75 per cent) to 48 per cent by importing more coal for thermal power and by constructing three nuclear power plants. Realizing that the growth of energy consumption cannot be curbed, the government instead wants to reduce the energy elasticity of income growth from 1·4 between 1975 and 1977 to 1·0 by 1989 by restructuring the island's source of energy supply.[75]

In addition to these examples of state policies for economic restructuring, reallocating resources and stimulating a more efficient use of resources, the government draws up four-year economic targets and plans, and communicates these economic forecasts to the private sector.[76] The private sector makes its response to this useful information provided by the government in the market place.

State Economic Power and the Public Sector. Given the flourishing private sector with its highly competitive characteristics and liberal institutions and laws designed to attract foreign investors, it is rather surprising how heavy the hand of government really is. Part of the reason for this has been the huge defence burden, which amounts to nearly 10 per cent of GNP.[77] But, even though defence spending accelerated somewhat after 1979 because the ROC found itself diplomatically adrift, state economic power has apparently been expanding anyway over the past two decades. For example, in 1961 government net expenditure as a percentage of GNP was 21·4 per cent, but in 1982 had run to 27·9 per cent.[78] If the current trend continues it could even become about one-third of GNP by the end of this decade.

74. Government officials hope to have 30% of the cost funded by foreign loans with another 29% financed by domestic loans, and the remainder paid from the state budget. See Council for Economic Planning and Development, "Highlights of the 12 new development projects," *ibid.* Vol. 53, No. 3 (25 March 1980), p. 35.

75. Chen Sen and Chi-yuan Liang, "Energy policies of the ROC, ROK and Japan–a comparison," *ibid.* Vol. 54, No. 3 (25 September 1980), pp. 2–16.

76. For discussions of such plans see "Telecommunications development plan for the 80's in the ROC," *ibid.* Vol. 50, No. 4 (25 April 1981); for petrochemical development in the 1980s, *ibid.* Vol. 55, No. 5 (25 May 1981), pp. 7–26 and Chen Sun, "The new four-year plan for Taiwan, Republic of China," *ibid.* Vol. 58, No. 2 (25 August 1982), pp. 1–12. For the 1982–85 period this most recent four-year plan projects a real GNP growth of 8%, and that in 1985 the per capita GNP in current prices at an exchange rate of NT$38 to US$1 will stand at US$4,303. The sectoral targets and other components of GNP have been estimated by a 32 equation macroeconomic model presented in this same article.

77. This estimate is based on taking defence and foreign affairs spending of the government budget (the two items are quite inseparable) at roughly 40% of the budget which in turn amounts to 28% of GNP. Budget data for 1985 fiscal year were reported in the *South China Morning Post*, 3 April 1984, p. 8, as US$3.44 billion for defence and foreign affairs to account for 39·4% of the budget, an increase of 6·7% over the last fiscal year.

78. *TSD 1983*, p. 158.

Unlike the enormous deficit spending by western governments, the ROC has operated in the red only in seven years between 1954 and 1982.[79] During the 1970s it ran hefty budget surpluses, which continued until 1982, when world recession reduced exports, and government spending exceeded revenues by about US$75 million. Since then the government has tightened spending, run a surplus in fiscal 1983 and 1984, and projects the same for 1985.

For the past two decades the state had derived nearly two-thirds of its revenue from various taxes and has earned nearly another 20 per cent from its public enterprises and monopoly bureaus.[80] These public enterprise earnings grow because government investment in public projects has expanded so greatly over the past decade. But recent unpublished studies show that the rate of return on capital in private enterprises is around three times that of public enterprises.[81] If true, this striking gap points to very inefficient management in public enterprises, a common criticism one constantly finds in the media in Taiwan.[82]

To be sure, the surge in private manufacturing in the past two decades managed to reduce the share of industrial output produced by public-owned firms from around 48 per cent in 1960 to about 20 per cent in 1982.[83] Electricity, gas and water, however, continued to remain under public management; and much of the infrastructural spending of the late 1970s and 1980s has been for expansion of industrial capacity in the state-owned shipyards and steel and petrochemical industries.

Because of its select planning and policy implementation, therefore, government expenditures have played a powerful role in facilitating resource deployment and in economic transformation. On the other hand, the government has preferred to maintain a tight control over money supply, and to the best of its ability allows it to grow at a steady rate, and does not juggle interest rates to influence savings (which are already very high) for capital formation. Very large annual increases in money supply did occur in 1977–78, in large part because of huge trade balances in current account: but money growth was subsequently reduced between 1979 and 1982 by almost half.[84] As the government continues to draw more foreign capital into Taiwan through foreign investment, joint ventures and overseas banking units, it will be interesting to observe whether its power continues to expand or finally equilibrates to that of the private sector.

79. *Ibid.* p. 151.
80. *Ibid.* p. 153.
81. This estimate was provided to me by an economist of the Institute for the Study of the Three People's Principles, Nankang, Academia Sinica. He has not yet published his results.
82. For a vigorous critique of the performance of public enterprises see Shi Jiping "Jingzheng, yaoburan jiu heli guanzhi" ("Compete or manage rationally"), *Zhongguo shibao*, 20 April 1984, p. 2.
83. *TSD 1983*, p. 81.
84. *Ibid.* p. 134.

Conclusion

Within only a quarter of a century millions have left farms for the cities, probably one of the largest migratory movements to cities in Asia since the Second World War. Industrialization is widespread, and the ROC economy on Taiwan is now more inextricably integrated with the world economy than ever before. This rapid transformation from a predominantly rural to urban society without great social unrest and with minimal deterioration of public morality has produced higher living standards, greater national wealth and a more equal distribution of income. This achievement is perhaps unprecedented in modern times. Certainly, this transformation has been unique, especially considering the political organizations that helped to orchestrate it. The Nationalist Party, like a phoenix risen from ashes, has proved that a successful strategy can modernize a society and yet preserve its traditions.

But it is a strategy which cannot be easily transferred to other developing countries seeking a quick solution to their economic dilemmas. Developing countries are not likely to duplicate the ROC's ability to use the state to modulate the private sector without stifling the very private enterprise activity those countries might want to encourage. Furthermore, the small scale enterprises and dynamic entrepreneurship so conspicuous in the ROC seems to be nourished by traditional Chinese cultural values, and these same values are not always found in the cultures of other developing countries.

For the foreseeable future ROC officials will certainly adhere to the principles of Sun Yat-sen in nurturing the private sector so as further to modernize the economy. But these coming years will bring many new difficulties to an economy that already derives over half of its gross national product from foreign exports. Such world-wide dependency, which has transformed the economy so far, is now much out of line with the ROC's formal international relations. But, even if that problem can be resolved, the immediate pending economic difficulties might very well overwhelm the Taiwan economy.

For example, a serious trade imbalance in Taiwan's favour has arisen with the United States, Taiwan's largest and most preferred trading partner. Already US$6 billion in 1983, it is projected to rise higher this year and even in 1985. American businesses now complain that the ROC strongly advocates free trade abroad but does not allow it at home.[85] American firms like Procter & Gamble, which have tried to forge links with Chinese companies to distribute their goods, have had to wait for

85. These complaints have produced successful political pressures to force the Department of Commerce (U.S. Government) to exempt Hong Kong, Singapore, South Korea and the Republic of China from having duty-free entry into the United States of numerous items as specified under the Generalized System of Preferences (GSP). As of 31 March 1984 exports from Taiwan to the United States, estimated at US$3·7 billion, will no longer enjoy GSP duty-free treatment. These include 117 items such as preserved papayas, farm and gardening tools, kitchen wares, radios and cameras. The U.S. Administration promises that, despite the exclusion, Taiwan's eligible trade in 1984 will be more than 20% greater than in 1983. See The Committee for a Free China, *China Letter*, Vol. 8, No. 3 (March–April 1984), pp. 3–4.

over a year to have their applications approved.[86] Foreign businesses increasingly complain that Taiwanese firms unscrupulously infringe their copyrights and copy their products for sale abroad.[87] Yet there are official moves currently underway to counter these new difficulties by lowering tariffs still further, upgrading marketing skills, encouraging export-orientated firms to diversify, adopting factoring trade practices, monitoring commodity quality as well as price, and imposing self-discipline where counterfeiting and copying prevail.[88]

Perhaps even more serious than this talk of protectionism from some of Taiwan's most lucrative trading partners will be the great difficulty of the ROC economy to make the necessary, flexible adjustment to ever-changing international demands. Taiwan is trying to develop advance industries in electronics, bio-genetics and robotics. Yet as its manufacturing and services sectors become more integrated, standardized and specialized, the ROC economy may find it increasingly harder to redeploy resources to new branches of activity where demand has weakened in older ones. Western European countries and the United States are now discovering just how hard it is to reallocate excess resources, particularly the highly skilled labour in their steel plants and car factories.

Although the ROC economy demonstrated great flexibility in the past, this might not be enough to weather future shocks without enormous strains being imposed upon organizations and businesses. Perhaps, because traditional neo-Confucian ideals and values still remain so strong in this society, it will be these that will see this country through such hard times.

86. Michael Specter, "Some cosmetic reforms to ease trade friction," *Far Eastern Economic Review*, 8 December 1983, pp. 66–67. In the spring of 1984 the government finally gave Procter & Gamble permission to go ahead with their marketing project.

87. In April James Lilley, Taipei director of the American Institute in Taiwan, conferred with Henry Hsu, chairman of the private National Anti-Counterfeiting Committee of Industry and Commerce. Lilley pointed out that recent studies in the United States concluded that commercial counterfeiting had costed American industries 130,000 jobs at US$8 billion in lost sales. Lilley also stressed that Taiwan accounted for more than 60% of the counterfeit goods in international trade. Lilley warned that the duty-free tariff benefits under the U.S. Generalized System of Preference could be used to punish Taiwan if means to combat counterfeiting were not stringently taken soon. See *China Post*, 20 April 1984, p. 12.

88. "Director-General Vincent Siew analyzes current ROC foreign trade," *China Post*, 19 April 1984, p. 7.