

Some Development Indicators of Taiwan: A Comparative Study

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Introduction

Special interest in East Asia has been aroused again recently from Japan's emergence as a world industrial power (Patrick and Rosovsky 1976). After much acclaim of Japan as Number One (Vogel 1979), people began realizing that not only Japan but also the smaller, newly industrializing countries (hereafter NICs) in Asia: Hong Kong, South Korea, Singapore, and Taiwan, have followed closely and performed as well as Japan, although on a smaller scale (Little 1979). These five fast-growing countries, along with China and North Korea, are now viewed as a "challenge" and a "threat" to the United States and the Western World and known as the Eastasia Edge (Hofheinz and Calder 1982). In this perspective, this paper examines some development indexes of Taiwan.

Taiwan's economic performance has been one of the best among the nations in the world after World War II. In fact, among 134 countries, for the period between 1950 and 1975, its annual growth rate of per capita "gross national product" (hereafter GNP) in 1974 U.S. dollars was 5.3%, ranking fifth,

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** The original version of this paper was presented to the Annual Meeting of the Western Conference of the Association for Asian Studies held at Boulder, Colorado, September 17-18, 1982. We are grateful to Charles Doering for editorial assistance.

behind only Japan (7.6%), Swaziland (7.0%), Iraq (5.9%), and Greece (5.4%) (Morawetz 1977: pp.77-80). In recent years the Taiwanese economy has been in the spotlight again as a new study has disclosed that Taiwan might be one of the few countries which has achieved this rapid growth with an equitable distribution of family income (Fei, Ranis, and Kuo 1979). Since there currently exists extensive literature on the Taiwanese economy itself (e.g., Ho 1978; Galenson 1979), the purpose of this paper is to compare some of its development indicators with those of selected countries.

Some Economic Indexes

It should be noted first that the term "development" has different meanings. Here we will use it in a broad sense to include some economic, social, and political aspects of Taiwanese society. Each of the indexes chosen is explained as it is introduced. Theoretically, an international comparison of these indexes may be made among all the countries in the world, as we have done previously (Hsiao and Hsiao 1981), or among countries in the same geographic area (WT 1980), or among those at similar levels of development (WDR 1980). Since most people like to compare themselves with a similar reference group, the emphasis of the comparisons in this paper will be on the NICs, especially among the Asian NICs: Hong Kong, South Korea, Singapore and Taiwan. Whenever appropriate, we also compare the Taiwanese indexes with those of other countries not among the NICs.

With a population of 17 million in mid-1978, Taiwan is a large country, ranking 37th among 153 U.N. members,¹ and is comparable to East Germany, Sudan, and Peru. It is rather small in terms of its area (36,000 km²), ranking 116th among U.N. members. It is 70% larger than Belgium (21,000 km²), but slightly smaller than the Netherlands (41,000 km²). The large population and small land area make Taiwan one of the most densely populated countries in the world. It has 472 persons per km², the sixth highest among U.N. members,² although it is only about one-

1. For a detailed comparison with other countries in this paragraph, see Hsiao and Hsiao (1981: 7).

2. Exceeded only by Singapore (3,973), Malta (1,051), Barbados (590), Bangladesh (559), and Maldives (476). See WSB, p. 197, as shown in Hsiao and Hsiao (1981: 7).

eighth as dense as Singapore and Hong Kong. Apparently the population density has little to do with the degree of development, as shown in Table 1.

The most important, although controversial, economic development index is per capita gross national product (GNP). GNP is a measure of the total gross domestic and foreign output claimed by the residents of a country. It is the sum of gross domestic product (GDP) and net factor income abroad (WT 1980: p.6)³. At current market prices, Taiwan's per capita GNP in 1977 was \$1,179, ranking 51st among 126 countries according to the World Bank (WT 1980: p.430). It is slightly higher than South Korea (\$977) and Turkey (\$1,110), and almost the same as Mexico (\$1,164, No. 52) and Panama (\$1,195, No. 50). It is higher than all the Asian countries except Japan (\$6,511), Singapore (\$2,820), Hong Kong (\$2,622) and Fiji (\$1,326). An alternate index to per capita GNP is per capita energy consumption which is measured in Kilograms of coal equivalent of petroleum, natural gas, coal and lignite, hydroelectricity, and nuclear power, but excluding traditional firewood. This is shown in Row 5 of Table 1. Taiwan's figure is certainly high, presenting a vigorous industrial country. However, in contrast with GNP per capita, Taiwan's energy consumption seems too high, particularly when it is compared with Hong Kong and S. Korea, probably indicating a lack of effective energy conservation policies in the country.

Although per capita national income is rather low, Taiwan's average national savings rate is high. It is measured by the total gross national savings between 1972 and 1977 divided by the total GNP at current market prices for the same period. At 29.6%, Taiwan ranked 12th among 126 countries. Other countries with high average saving ratios are mostly oil producing countries, except Japan, which had 34.4% and ranked seventh. High saving ratios result in high investment, and consequently a high growth rate. Since Taiwan is a resource poor country, a high saving ratio depends only on the frugality of the Taiwanese people. This partly explains the rapid growth of the Taiwanese economy.

Industrialization requires some degree of urbanization.

3. The source of data is quoted in initials, which are alphabetically ordered under the original title in the list of references. Thus WT = World Tables, WDR = World Development Report, etc.

Urbanization is partially revealed in the size of the urban population and in the size of the industrial labor force vis-a-vis agricultural labor. These are shown in Rows 7 and 8 of Table 1. About 77% of the Taiwanese population live in urban areas, almost the same as that of Japan and the U.S.A., but the percentage of the labor force in agriculture still is 37%, slightly lower than South Korea (41%), but much higher than that of Japan (13%) and the U.S.A. (2%). The low percentages of agricultural labor in Singapore and Hong Kong are due to the city-state nature of these islands.

In addition to domestic saving, other sources of investment for development come from trade surplus and foreign loans and investment. These are shown Rows 9 to 13. In 1978, the last year of the recovery from the first oil crisis of 1973-74 and just a year before the second oil crisis in 1979, the Taiwanese and Japanese economies had recovered from the initial crisis and experienced a large trade surplus, while South Korea, Singapore, and the U.S.A. had trade deficits. In terms of foreign loans that have been disbursed by 1978, Taiwan's external public debt outstanding stood at 2.9 billion U.S. dollars, ranking 21st among 90 low-income and middle-income countries (WDR 1980: pp. 138-39), about one-fourth of Korea's debt, but well above those of Singapore and Hong Kong. Both Taiwan and Korea borrow heavily from outside to promote economic development. Row 11, Table 1, shows the external public debt as a percentage of GNP. For Taiwan, the debt burden is 12.1%, ranking 64th among 90 low- and middle-income countries. Its debt burden in terms of GNP is not as heavy as most of the other developing nations. Rows 12 and 13 show the extent of the net inflow of public loans and private investment in 1978. Note the importance of public loans for Taiwan and South Korea. Japan and the U.S.A. had negative private investment, which shows the amount of foreign investment by firms of the developed countries.

Social Indexes

Social indexes include cultural, health and educational development (Harbison, Maruhnich and Resnick 1970: pp. 15-17). Due to the availability of data, the following indexes are chosen for comparison.

Cultural Development Index: (as a proxy for modernization)

1. Radio receivers per 1,000 population
2. Passenger cars and commercial vehicles per 1,000 population
3. Literacy rate of adult population over 15 years old

Health Index:

4. Population per physician
5. Population per hospital bed
6. Daily calorie supply per capita
7. Life expectancy at birth

Educational Effort Index:

8. Second level enrollment
9. Third level enrollment

Composite Index:

10. Physical quality of life index (PQLI)

These ten indexes are listed in Table 2. All data are based on World Development Report, 1980, except Rows 1, 2, and 5, which are taken from the most recent estimation (MRE) between 1974 and 1977 by the World Bank (WT 1980), and the last index, physical quality of life index (hereafter PQLI), was taken from Sewell (1980). The numbers with a plus sign are taken from the data "for years other than, but generally not more than two years distant from, those specified" (WDR 1980: pp. 158). Hence, most of the data are not strictly comparable. However, since social conditions change only gradually, the data provide some long-run trends of development and modernization.

In general, Taiwan's social indexes, like the economic indexes, are better than Korea but worse than Singapore and Hong Kong, as might be expected. However, the data reveal several surprises. Despite the fact that about 16% of Taiwan's exports consist of electric machinery and appliances, Taiwan's radio receivers per thousand population (97) is well below other countries. It seems that most of the electric and electronic equipment was produced in the Export Processing Zone and not directly accessible to the Taiwanese people themselves. Another disappointment is the adult literacy rate, which is the percentage of adults aged 15 and over with the ability to both read and write. Despite well-touted

achievements in the field of education, as much as 20% of the people in Taiwan were still illiterate, possibly well below all other countries in Table 2 except Singapore. The Taiwanese data are somewhat better in the number enrolled in the third (higher) level education as a percentage of population aged 20-24 (Row 9, Table 2). However, the differences among the four NICs are not significant and are still well below Japan and the U.S.

Another interesting point is about the Taiwanese data on the population per physician and per hospital bed, which are, respectively, "the total population divided by the number of practicing physicians qualified from medical school at a university level," and "by the number of hospital beds available in public and private hospitals and rehabilitation centers." Both numbers for Taiwan are high when compared with other countries except South Korea. The lack of physicians is not due to a lack of medical schools. It seems to reflect the brain drain. Many graduates of Taiwan's medical schools went abroad for "study," but as few as 4.4% came back to Taiwan from 1965 to 1980 (Hsiao and Kim 1982). Taiwan's daily calorie supply per capita, which is the per capita calorie equivalent of food supplies as a percentage of requirement, is almost the same as Korea, but relatively low when compared with others. Nevertheless, life expectancy at birth, which indicates the number of years newborn children may expect to live, are more or less equivalent with other countries except Korea. Note that China's daily calorie equivalent per capita is estimated to be above the minimum daily requirement (105%), a feast for a country with a population close to one billion (India has only 91%, WDR 1980, Table 22). Similarly, life expectancy at birth is 70 years (WDR 1980, Table 1), comparable to most other countries except South Korea and Japan. This may reflect good, if not better, medical care in China (Hsiao and Hsiao 1981; Richman 1975: p. 353).

The last index is PQLI, which combines three indexes: literacy, life expectancy, and infant mortality. The results are more or less expected from the above analysis. However, two things are worth noting. First despite the difference in the economic and social indexes we have discussed above, the "physical quality of life" in Taiwan, South Korea, and Singapore does not differ significantly. Second, the quality of Chinese life (71) is, although relatively low in the table, very respectable considering its population and the land area, especially when it is compared with the PQLI of India

(43), Pakistan (38), and Indonesia (55) (Sewell 1980; Wright 1982: pp. 16-17).

Political and Defense Development Indexes

Two of the most important aspects of the economic and social development indicators are the degree of political freedom and military defense. They are, however, often neglected in an international comparison since the concept of freedom is hard to measure and defense expenditures are always shrouded with much secrecy. We have tried to compare these two indexes based on the data published by Freedom House and the International Institute for Strategic Studies in London. These are shown in Tables 3 and 4.

Freedom House uses a seven-point scale for political and civil freedom, one corresponding to the most freedom and seven to the least. It then provides an overall judgement of each country as "free" (1 and 2), "partly free" (3 to 5), or "not free" (6 and 7) (Gastil 1979: pp. 15-24). Political rights rate electoral powers, existence of significant opposition parties, openness of voting procedures, and the power of the elected representatives. The civil liberties are evaluated on the basis of independence of the news media, freedom of opinion, religion and movements, right to a fair trial, and number of political prisoners. Economic freedom considers freedom to own property, of association, movement, and information (Wright 1982: p. 15). In Table 3, it can be seen that economic freedom is closely related to the status of freedom in each country. Except in Hong Kong, the political freedom of Taiwan, South Korea, and Singapore are similar. The average rating between 1973 and 1982, however, shows Taiwan to be more restrictive in political rights (5.6), with Korea more restrictive in civil liberties (5.6). In general, Taiwan's political freedom over the past ten years is rated more restrictive (4NF, 6PF) than any other except China (10NF). It may be interesting to know that the difference in the average rating of political rights between Taiwan and China is insignificant (5.6 for Taiwan and 6.5 for China), although there is some difference in civil rights (4.5 vis-a-vis 6.4). These ratings belie the "Free" China.

For many developed and developing countries, defense expen-

Table 1
ECONOMIC DEVELOPMENT INDEX

	Taiwan	South Korea	Singapore	Hong Kong	Japan	China	U.S.A.
1. Area (1,000 km ²)	36.0*	99*	0.6	1.0*	372	9,597	9,863
2. Population, in millions (Mid-1978)	17*	37*	2.3	4.6*	115	952*	218
3. Population Density (Mid-1977, persons/km ²)	472*	376*	3,973	4,408*	307	90	23
4. GNP per capita, 1977 (Ranking in N=126)	1,179 (51)	977 (56)	2,820 (30)	2,622 (33)	6,511 (18)	2,30* (108)	8,750 (7)
5. Energy consumption per capita, 1978, in Kg. of coal equivalent	2,202	1,359	2,461	1,657	3,825	805	11,374
6. Average national savings rate in %, 1972-77 (Ranking in N=126)	29.6 (12)	22.4 (32)	26.4 (20)	21.6 (40)	34.4 (7)	-	18.2 (56)
7. % of urban population, 1980	77	55	100	90	78	25	73
8. % of labor force in agriculture (industry), 1978	37 (37)	41 (37)	2 (38)	3 (57)	13 (39)	62 (25)	2 (33)
9. Current account balance before interest payment, (in US\$), 1978	1,979	-455	-669	317 (1977)	17,528	na	-4,432
10. External public debt (b US\$, 1978)	2.9	12.0	1.1	0.2	0	na	0
11. External public debt as % of GNP, 1978	12.1	26.1	14.8	1.6	0	na	0
12. Public loans, net inflow (in US\$), 1978	227	2,777	40	38	0	na	0
13. Private investment (in US\$), 1978	110	61	42.2	-	-2,341	na	-10,404

Sources: Rows (1) - (3), WSB 1979; Rows (4) and (6), WT 1980, Tables 10-11. Other figures are based on WDR 1980. N = the total number of countries in the sample. b = billions of, m = millions of. *See WDR 1980.

Table 2
SOCIAL INDEXES

	Taiwan	South Korea	Singapore	Hong Kong	Japan	China	U.S.A.
Cultural							
1. Radio/1,000 (MRE)	97	144	158	527	530	—	1,882
2. Cars/1,000 (MRE)	8	2.7	62.4	27	164	—	499
3. Percent of adult literacy (1975)	82+	93	75+	90	99	—	99+
Health							
4. Population/physician (1977)	1,570+	1,960	1,260	1,280	850	—	580
5. Population/hospital bed (MRE)	450	1,430	280	240	100	—	150
6. Calorie/capita (1977)	120	119	134	126	126	105	135
7. Life expectancy (1978)	72	63	70	72	76	70	73
Educational Effort							
8. 2nd level education in % (1977)	76+	88+	55	59	93	—	93+
9. 3rd level education in % (1976)	12+	11+	9+	10+	29	—	56+
10. PQLI (1980)	87	83	86	—	97	71	95

Sources: Data on MRE (see the text) are from WT 1980, on PQLI are based on Wright 1982, Table; others are from WDR 1980.

Note: + indicates the number taken from other years, see the text.

Table 3
FREEDOM INDEX

	Economic Freedom		Political Rights		Civil Liberties		Status of Freedom	
	1982 (1)	1982 (2)	1982 (3)	1982 (4)	1982 (5)	1982 (6)	1982 (7)	
Taiwan	Medium	5.6	5	4.5	5	NF4 PF6	PF	
South Korea	Medium	4.8	5	5.6	6	NF2 PF8	PF	
Singapore	Medium	4.9	4	5.0	5	PF10	PF	
Hong Kong	—	3.2*	4	2.0*	2	PF6 F3, NA1*	PF	
Japan	High	1.8	1	1.0	1	F10	F	
China	Low	6.5	6	6.4	6	NF10	NF	
U.S.A.	High	1.0	1	1.0	1	F10	F	

Sources: For Economic Freedom, See Wright 1982: 16-17; other figures are based on the forthcoming edition of *Freedom in the World, 1982*, obtained through the courtesy of Ms. Lindsay M. Wright of Freedom House. Also see Castil 1982.

Notes: F = Freedom, PF = Partial Freedom, NF = No Freedom.

*Average of 9 years, as Hong Kong's data for 1974 are not available.

Table 4
DEFENSE EXPENDITURES AND BURDEN

	Taiwan	South Korea		Singapore		Japan		China		U.S.A.	
	1975 (1977)	1975 (1980)	1975 (1980)	1975 (1980)	1975 (1980)	1975 (1980)	1975 (1980)	1975 (1980)	1975 (1980)	1975 (1980)	1975 (1980)
Defense Expenditures (Billions of US \$)	1.0 (1.7)	0.9 (3.5)	0.3 (0.5)	4.6 (9.0)	— (57)	89 (143)					
per capita (US \$)	61 (95*)	28 (91)	152 (239)	42 (75)	— (56)	417 (644)					
% of government spending	50 (48.3*)	29.2 (30)	18.1 (16.5)	6.6 (4.7)	— (—)	23.8 (23.3)					
% of GNP	6.9 (8.3*)	5.1 (5.7)	5.3 (6.1)	0.9 (0.9)	— (9.0*)	5.9 (5.5)					
Number in armed forces (millions)	0.5 (0.4)	0.6 (0.6)	0.03 (0.04)	0.2 (0.2)	— (4.5)	2.1 (2.1)					

Sources: *The Military Balance 1981-82*, pp. 79, 112-113. *Based on IPA, 1982: 403-404.

ditures constitute the largest drain for social and economic development programs. This is certainly true for the countries in Table 4, except Hong Kong. Taiwan has to defend itself against China, as does South Korea against North Korea. Singapore has to protect its 55 islands and secure water supplies on the Malaysian mainland. Table 4 shows the defense expenditures and various burdens for 1975 and 1980, respectively, except that the Taiwanese data are available only up to 1977, and the Chinese data are not available for 1975. Military expenditures almost doubled between 1975 and 1980, as did the per capita defense expenditure, and as a percentage of GNP it increased slightly. Note that among the three countries, Singapore has the highest per capita expenditure, Taiwan has the highest ratio of defense expenditure to GNP⁴, while Korea maintains the largest armed forces.

Although it is not clear at what point the ratio of defense expenditure to GNP becomes undesirably high, the military burden of the Taiwanese economy is certainly high as compared with other countries. It not only squeezes the developmental and social programs, but also helps maintain the secretive authoritarian government in the name of anti-communism. Nobody will deny the importance of defense. The main problem is that, since the status of freedom is severely limited in Taiwan as well as many other developing countries, there is no discussion of, nor checks and balances for military expenditures versus government expenditures for social and economic programs.

Concluding Remarks

In this paper, we have shown that through the thrift and hard work of the Taiwanese, helped by foreign aid and investments, the Taiwanese economy has been one of the fastest growing economies in the world since World War II. Nevertheless, the general living standard, as shown by the social indexes, has been lagging behind and did not improve as much as we might have expected from

4. Taiwan also has the highest percentage of defense expenditures in government spending. Note that there are two budgets in Taiwan, "provincial" and "national." It is estimated that 50% of the "national" budget is for defense, which produced 1 billion U.S. dollars in defense expenditures in 1975. 65-70% of defense equipment is locally manufactured. U.S. military aid in 1974 was 65 million U.S. dollars (Keegan 1979: p. 696).

rapid growth. From our tables we have seen that Taiwan has a rather large population which has diluted the gain from economic progress. The data also suggest that the lack of political freedom may also keep the Taiwanese economy from achieving the delicate balance between military expenditures and other social programs. The sooner the people and the government of Taiwan identify these problems, the faster Taiwan will be able to join the ranks of developed countries.

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