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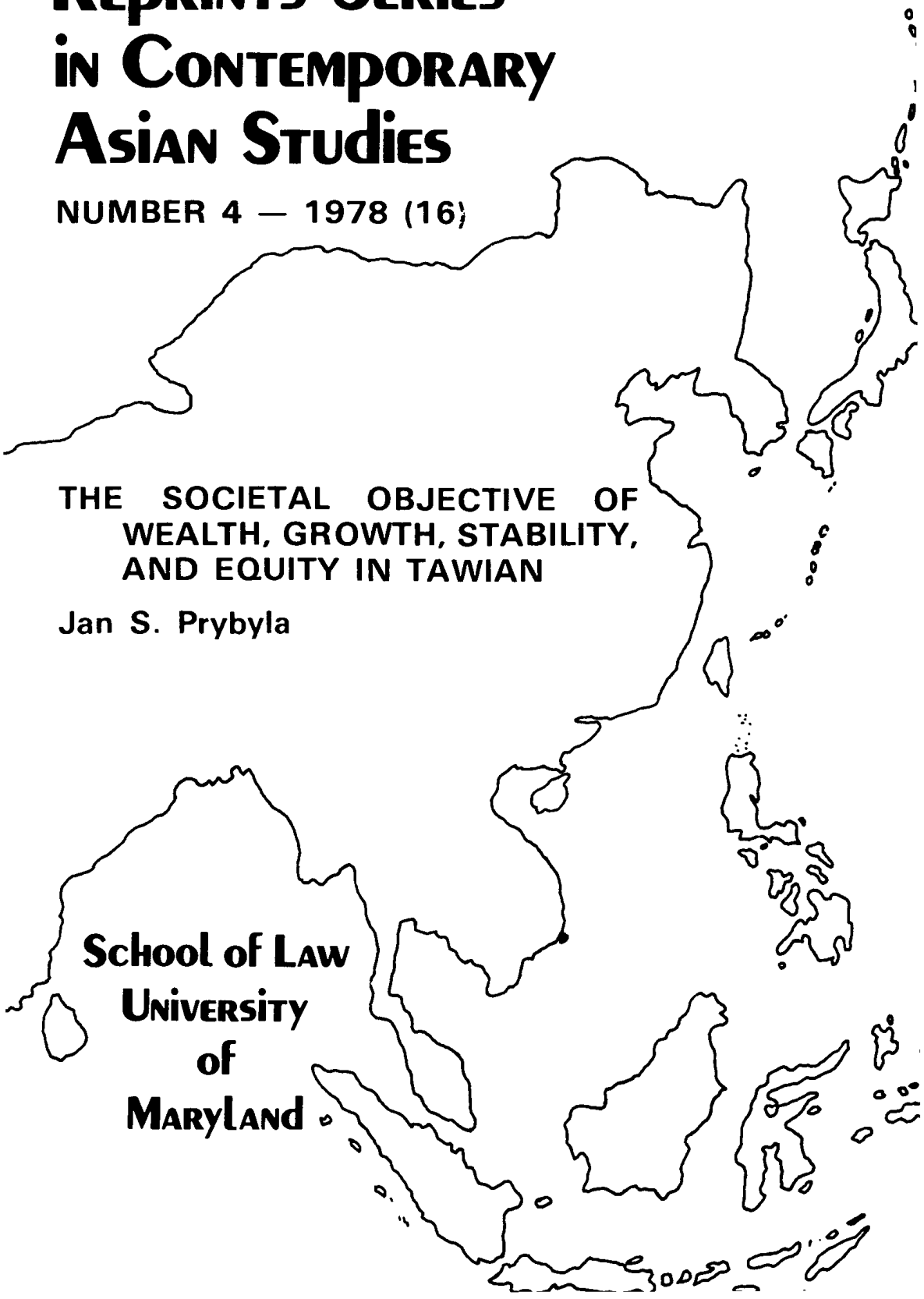

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THE SOCIETAL OBJECTIVES OF WEALTH, GROWTH, STABILITY, AND EQUITY IN TAIWAN

JAN S. PRYBYLA*

This paper examines four major societal objectives ("social preference functions") of Taiwan during the period 1962–1974. Wherever possible, data subsequent to 1974 are given in the text.

Wealth and Growth

Wealth is the existence of goods and services overall and per person at a given point in time. This wealth may be potential (e.g., proven petroleum reserves, land reclaimable for farm use, qualities of the people which could be harnessed for productive ends by appropriate organization), or actual, i.e., goods and services currently produced and marketed. Two commonly used measures of actual wealth are Gross National Product (GNP) and Gross Domestic Product (GDP), as well as their sources and final uses. The measures are imperfect. They count much that could be described as social "illth," and ignore many assets which, while they defy quantification, could properly be described as being of exemplary benefit to the community.

Economic growth is the capacity of an economy to increase the stock of wealth over time. While the concept of wealth deals with the statics of stocks, growth is concerned with the dynamics of income flows. Here, too, it is possible to distinguish between potential and actual growth. Changes in GNP or GDP and in their components are used to measure an economy's actual rate of growth. Here also one may legitimately argue about the merits of coverage. Much statistically measurable growth is harmful in a broader human perspective, but this insight comes only from the actual experience of growth. Societies which have not experienced sustained growth do not, as a rule, perceive growth as something proximately or even remotely threatening to themselves as collectivities or to their citizens as individuals. They want to get in on the action before decrying it.

Gross National Product and Gross Domestic Product

Total and Per Capita GNP

Table 1 shows the real GNP of Taiwan in 1952 and 1974. The year 1952 marked the end of the period of postwar rehabilitation

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and the beginning of efforts at an institutional restructuring of the island's economy. Long-term planning by the government began in 1953 (as it did in mainland China). 1974 was a poor year for Taiwan's economy buffetted by rapidly swelling energy costs, inflation, and imported recession.[1]

The overall real growth performance of Taiwan is quite remarkable. The annual real rate of 8 percent for the whole period 1953–74 conceals subperiods of low and high GNP growth. The subperiod 1953–62 showed an average annual growth rate of just under 7 percent in real terms, while the subperiod 1963–74 had an annual growth rate of 10 percent.[2] The world-wide energy crisis and the recession of 1974–75 marred this performance: the real GNP growth rate in 1975 was 1.2 percent above the year before. By 1976, however, the economy was recovering. In constant prices of 1971, the 1976 GNP was about 11.5 percent above 1975.[3]

The 1974 per capita GNP of almost $500 placed Taiwan among the better-off countries and city-states of Asia. In 1974 the per capita GNP of mainland China was estimated at $214–240 (1970 dollars) depending on assumptions about population growth. In 1952 the relevant figure (1970 dollars) was $104.

Gross fixed capital formation, which in 1952 was 11 percent of GDP, began to rise rapidly (both absolutely and relatively) in the mid-1960's, reaching 29 percent of GDP in 1974 (current price basis). For the period 1951–74 the average annual rate of gross fixed capital formation was 14.6 percent and 15.3 percent, per year for the period 1960–74 (constant price basis). During the period 1951–74 the average annual real growth rate of GDP was 8.4 percent, and 8.8 percent per annum during 1960–74.

Sectoral Origin of Product

Economic growth is associated with industrialization, which is reflected in (a) a rising share of industrial output in GNP or

1. In 1952 the per capita GNP of the People's Republic of China (PRC) was about ⅗ that of Taiwan (Republic of China, or ROC). The principal reason for the discrepancy was a half century of Japanese investment in Formosa. By 1974 the per capita GNP of the PRC had slipped to between ⅗ and ½ that of the ROC. The reason for the slippage was the slower growth of the PRC's gross national product. The population growth rate was probably higher during the period 1952–74 on Taiwan than it was on the mainland.

2. In communist China the reverse was true. The real growth rate for the whole period 1953–74 was about 5½ percent per annum. This was composed of a high growth subperiod (1953–57) of roughly 11 percent a year, and a comparatively low growth subperiod (1958–74) of a little better than 5 percent per year.

3. Both figures adjusted for gain or loss due to changes in terms of trade.

Table 1. Real Gross National Product of Taiwan

Year	Total (U.S. $ Billion)[1]	Per Capita (U.S. $)[1,2]	Index (1952 = 100) Total	Index (1952 = 100) Per Capita	Average Annual Growth Rate 1953-74 (Percent) Total	Average Annual Growth Rate 1953-74 (Percent) Per Capita
1952	1.45	179	100	100	8.0	4.9
1974	7.90	497	545	278		

1. GNP in constant prices of 1971 converted to U.S. dollars at the exchange rate of U.S.$1 = NT$40 (new Taiwan dollars), and adjusted for gain or loss due to changed terms of trade. Without the adjustment the average annual growth rate of total GNP for 1953-74 would be 8.3 percent.
2. Based on total GNP as in note 1. End of year population in 1952 = 8.1 million; 1974 = 15.9 million.

Source: Economic Planning Council, Executive Yuan, *Taiwan Statistical Data Book 1975* [hereafter cited as *TSDB 1975*] (Taipei, Taiwan, Republic of China: 1975), pp. 4, 19.

GDP over time (Table 2), and (b) the composition of the industrializing country's exports and imports, particularly the former (Table 3). The industrialization process in Taiwan is clearly revealed by both tables. Not explicitly shown in Table 2 is the fact that, compared with 1952, a greater share of the 1974 industrial output originated in the mechanized factory sector. In 1952 a little less than half of Communist China's GDP originated in agriculture (compared with just under one-third for Taiwan). By 1974 this share had dropped to a little less than two-fifths (compared with 14 percent for Taiwan).

Table 3 shows Taiwan's reliance on imports of (increasingly advanced) capital equipment for industrialization, almost all of that capital coming from Japan and the United States. In absolute terms capital goods imports, which were NT$340 million in 1952, came to NT$85 billion in 1974 (current prices). The more recent emphasis on the development of steel and machine-building industries is intended to reduce this import dependence. It is, however, likely to increase still further Taiwan's dependence on imports of industrial raw materials and sources of primary energy. In 1952 exports of all agricultural products (unprocessed and processed) constituted roughly 80 percent of the PRC's total exports (unprocessed products almost 60 percent). By 1974 agricultural exports were believed to represent about 54 percent of the PRC's exports (unprocessed products less than 30 percent).

Agricultural Production. A problem facing Taiwan is how to feed — and feed better over time — a rapidly growing population out of a very limited land area.

The problem of land/population ratios (Table 4) called for attacks on two fronts: social and technical. Taiwan answered the first by an early land-to-the-tiller reform: a diffusion and consolidation of private family ownership (Table 5). The number of owner-tiller households, which was 262,000 in 1952, rose to roughly 694,000 in 1974. In 1952 the total number of persons comprised in owner-tiller households was 1.6 million; in 1974 it was 4.6 million. In Taiwan a typical family farm has just under one hectare of arable land. Even in 1960 there were no farms larger than 10 hectares, and only 15 percent of farm households worked farms of 3–10 hectares. Because of inheritance-related subdivisions, the average size of farm per family is declining.

On the technical front Taiwan attacked the land/population problem in an "intensive" way, i.e., by striving to increase yields through chemicalization, seed improvement, scientific land and

Table 2. Gross Domestic Product by Sector of Origin* (Percentage Shares)

Year	Total GDP	Agriculture[1]	Industry — Total[2]	Industry — Manufacturing	Construction	Domestic Trade	Transport Communications[3]	Other[4]
1952	100	32	18	16	4	19	4	23
1974	100	14	41	37	4	11	6	24

*Current price basis.

1. Agriculture, hunting, forestry, and fishing.
2. Mining and quarrying, manufacturing, electricity, gas, water, and sanitary services.
3. Transport, storage, and communications.
4. Banking, insurance, real estate, ownership of dwellings, public administration, defense, and other services, excluding banking imputed interest.

Source: Directorate-General of Budget and Accounting Statistics, Executive Yuan, Republic of China, *Statistical Yearbook of the Republic of China 1975* [hereafter: *SYROC 1975*] (Taipei, Taiwan, ROC: 1975), Table 178, p. 191.

Table 3. Composition of Exports and Imports* (Percent)

Year	Total	Agricultural Products	Processed Agricultural Products	Industrial Products
		Exports		
1952	100	22	70	8
1974	100	5	11	84

Year	Total	Capital Goods	Agricultural & Industrial Raw Materials	Consumption Goods
		Imports		
1952	100	13	67	20
1974	100	32	62	6

*Current price basis.
Source: *TSDB 1975,* pp. 177–178.

Table 4. Land and Population

Year	Total (end of year) Population (Million)	Agricultural Population* Total (Million)	Agricultural Population* As Percentage of Total Population	Cultivated Land Total (1,000 ha)	Cultivated Land As Percentage of Total Land area	Cultivated Land per Capita of Population (Hectares)	Cultivated Land per Capita of Agricultural Population (hectares)
1952	8.1	4.3	53	876	24	0.11	0.20
1974	15.9	5.8	36	917	25	0.06	0.16

* Those living on farms. All agricultural population, not just those exclusively engaged in agricultural employments. Those engaged in agricultural employments numbered 1.8 million in 1952, and 2.3 million in 1974. The per capita availability of cultivated land per agricultural employment was 0.49 ha in 1952, and 0.40 ha in 1974.

Source: *TSDB 1975,* pp. 4, 49–50.

Note: In 1974, cultivated land per capita of agricultural population in the PRC was 0.14–0.16 hectares, depending on assumptions about population growth. In 1952 the relevant figure had been 0.22 hectares.

livestock management, and mechanization. Much attention has also been given to improving marketing procedures.

Table 5. Property Structure in Agriculture
(Percent of Farm Population)

Year	Full Owner	Part Owner	Tenant
1949	36	25	39
1952	38	26	36
1974	80	11	9

Sources: *TSDB 1975,* p. 49. Y. T. Wang, "Agricultural Development," in K. Chang (Ed.), *Economic Development in Taiwan* (Taipei: 1968), p. 224.

The intensive way to spur agricultural output is reflected in data on the consumption of chemical fertilizers, the availability of farm machinery and tools, and on multiple cropping (Tables 6, 7, and 8).

Table 6. Consumption of Chemical Fertilizers*
(Thousand Metric Tons)

Year	Phosphate Fertilizers	Nitrogenous Fertilizers	Potash Fertilizers
1952	18	76	16
1974	58	208	78

*Conversion coefficients are the same as those used by the United Nations in their *Statistical Yearbooks.*

Source: *SYROC 1975,* p. 168.

Chemical fertilizer applied per hectare of planted rice area was 461 kilograms (weight basis) in 1952, and 777 Kilograms in 1974. For sugarcane the respective figures were 680 kg (1952) and 1,270 kg (1974).

Mechanization and semi-mechanization have made important strides between 1960 and 1974, an achievement all the more interesting given the very small size of family farms. However, Taiwan's agriculture remains labor-intensive and largely manual. In 1974, for example, there were only 0.05 power tillers, 0.5 hand trailers, and 0.2 hand sprayers per rural household. Farm mechanization in Taiwan is designed primarily to allow farmers to do more in a given working period and at the same time to reduce the pain of doing it. The idea is to save on labor in peak

Table 7. Availability of Farm Machinery and Implements (Number)*

End of Year	Power Tillers	Water Pumps	Rice Threshers	Power Dusters and Sprayers	Hand Sprayers	Hand Dusters	Winnowers	Ox-carts	Hand Trailers
1960	3,200	8,400	177,300	53	104,200	10.800	139,000	89,200	24,600
1974	41,200	119,900	135,200	45,400	203,700	19,100	152,000	82,600	44,300

* To the nearest hundred, except power dusters and sprayers in 1960.
Source: SYROC 1975, p. 90.

Table 8. Index of Multiple Cropping (MCI)*

Year	MCI
1952	172
1974	179
Highest achieved (1952–74)**	190

*MCI = $\frac{\text{Crop (sown) area}}{\text{Cultivated area}}$

**In 1966.

Source: *TSDB 1975,* p. 48.

Note: In 1952 the MCI for mainland China was 131. The estimated MCI in 1974 was 185. The longer range objective was to reach an MCI of 250–300.

seasons when it is in short supply and so release it for other necessary, more labor-intensive jobs. In Taiwan it takes 19.5 hours for a power tiller to cultivate 1 hectare of paddy field; a water buffalo does the same job in 91.5 hours.

One way to get more product out of a given amount of land is to tend the land in such a way as to reap two or three harvests a year where formerly one harvest was the rule. If, in addition, because of better land and water management, chemicalization, mechanization, seed selection, and so on, each harvest produces more than the original, one is well on the way toward making a dent in the land/population problem through intensification (intersectoral transformation) of farming. Table 8 shows that in Taiwan the sown area (the area sown or transplanted with agricultural crops) is substantially larger than the cultivated area (land devoted to cultivation of crops, including land uncultivated for up to three years, and currently fallow land). The explanation lies in multiple cropping and intercropping. Incidentally, the index of multiple cropping (MCI) which expresses this relationship is roughly the same for Taiwan as for the PRC.

The policy of intensification has paid off in rising *yields* per hectare (Table 9). The achievement has been impressive. By the early 1970's Taiwan's yields of many key crops were approaching those of the world's higher yield producers, such as Japan. But there was room for improvement. For example, Japanese yields of paddy rice in 1974 were 6,020 kilograms per hectare, compared to Taiwan's 4,136 kilograms.

An interesting development in food comsumption should be mentioned here. With rising per capita income in both Taiwan

Table 9. Selected Crop Yields

Crop	Year	Kilograms Per Hectare	Index (1952 = 100)
Rice (brown)	1952	1,998	100
	1974	3,153	158
Wheat*	1952	1,139	100
	1974	2,424	213
Soybeans	1952	602	100
	1974	1,505	250
Peanuts*	1952	741	100
	1974	1,458	197
Cotton (raw)*	1952	457	100
	1974	1,122	246
Sweet potatoes	1952	8,953	100
	1974	15,476	173
Sugarcane	1952	49,003	100
	1974	88,589	181
Jute	1952	1,241	100
	1974	1,511	122
Tea	1952	305	100
	1974	760	249
Bananas	1952	6,811	100
	1974	21,125	310
Pineapple	1952	10,731	100
	1974	23,192	216
Citrus fruits	1952	6,024	100
	1974	11,390	189

* Harvested area.
Source: TSDB 1975, pp. 53–56.

and Japan, consumers' preferences have gradually shifted away from rice and toward wheat, the latter being considered a superior good.[4] Since very little wheat is grown in Taiwan (less than 3 percent of requirements), the shift in consumption patterns has meant increased strain on Taiwan's balance of payments. In 1960 Taiwan imported 278,000 tons of wheat; in 1969 the figure was

4. A contributory cause to the shift away from rice consumption in both Taiwan and Japan is the fact that industrialization and urbanization demand that time be saved for purposes other than cooking. Professor Wei Wou argues that rice in Taiwan is not considered psychologically an inferior good, but bread is considered a superior good. As soon as the consumers find that they cannot afford wheat, they readily switch back to rice. Wei Wou, "Wheat and Rice: An Investigation of Taiwan's Export and Import Problems," *Proceedings of the American Statistical Association 1974* (Business and Economics Section), pp. 623–626.

more than doubled i.e., 560,000 tons.[5] The balance of payments problem was compounded by a similar shift away from rice consumption in Japan, Taiwan's principal customer for rice. Taiwan's exports of that commodity to Japan decreased in consequence. A shift has also been taking place toward the consumption of meat and dairy products, a development which — while nutritionally desirable — is a costly, roundabout way for the consumer to acquire proteins: imported grain must be fed to cattle before ending up as food for humans. One pound of meat requires, on the average, four pounds of feed (corn, soybeans) eaten by meat animals. Between 1950 and 1974 livestock output in Taiwan had quintupled, purchases of corn which in 1952 were negligible came to NT$6.5 billion in 1974, and imports of dairy products which cost NT$32 million in 1952, stood at NT$1.6 billion in 1974 (current prices).

Taiwan aims at a 90 percent self-sufficiency in food by 1981 (at the present time the island is about 85 percent self-sufficient). The task will not be easy, given the rapid urbanization of the country with its accompanying secular shrinkage of agriculturally usable area, the rising costs of chemical fertilizers without the use of which the green revolution cannot be sustained, and the difficulty of reducing the rate of natural population increase. Agricultural output has in the past risen at rates shown in Table 10. These rates are creditable, but they have thus far just about kept up with the rate of population growth. The *total output* of some key commodities is shown in Table 11.

Table 10 suggests a problem facing Taiwan's agriculture. There has been a decline in the rate of growth of agricultural output between 1953 and 1974. In 1975 the general index of agricultural production was 106.3 (1971 = 100), down 2 percent from the 1974 index of 108.5. The crop production index in 1975 at 104.7 was 2.7 percent below the 1974 index of 107.6; and the 1975 livestock production index at 109.8 was down 6.2 percent from the 1974 index of 117.5. As much as could be done has been done to add to agricultural land. The parcelization of farms, whatever its social and cultural benefits, involves costs with respect to economies of scale. Since about the mid-1960's farmers' real incomes have lagged behind those of industrial workers.[6] This has

5. Wheat imports which cost NT$10 million in 1952, skyrocketed to NT$6.3 billion in 1974.

6. Paid employees in agriculture (some 223,000 laborers) were the lowest paid employees in the economy in January 1976. Their average earnings were

no doubt affected productivity and spurred the migration of people from rural to urban industrial areas: the net outflow of agricultural labor into nonagricultural employments in the period 1971–75

Table 10. Average Annual Growth Rates of Agricultural Output (Percent)

Period	Total		Per Capita[3]	
	General[1]	Agriculture[2]	General[1]	Agriculture[2]
1953–64	5.0	4.0	1.5	0.5
1965–74	3.7	2.6	1.1	0
1953–74	4.4	3.4	1.3	0.3

1. Includes, in addition to agricultural output proper, the output of forestry, fisheries, and livestock.
2. Agricultural products only.
3. Average annual population growth rates:
   1953–64: 3.5%
   1965–74: 2.6%
   1953–74: 3.1%

Source: TSDB 1975, pp. 2–52.

Table 11. Output of Selected Agricultural Products (1,000 metric tons, except as indicated)

Product	1952	1974	Index 1952	Index 1974
Rice (brown)	1,570	2,452	100	156
Wheat	17	0.7	100	4
Cotton	989	881	100	89
Peanuts	60	94	100	157
Pigs (thous. head)	2,611	2,809	100	108
Cattle[1]	383	242	100	63
Corn	7	107	100	1,529
Milk	1	42	100	4,200
Soybeans	15	67	100	447
Tea	12	24	100	200
Sugarcane	4,801	8,896	100	185
Fish catches	122	698	100	572

1. Including water buffalo.

Sources: SYROC 1975, pp. 81–83; *TSDB 1975,* pp. 53–56.

NT$2,941, which compared with NT$3,526 for service workers, NT$3,555 for operative production workers, and NT$3,967 for sales personnel. The average earnings of paid employees were at that time NT$3,976. Pei-chi Chang, "Taiwan's

was 5.6 percent of the agricultural labor force.[7] Steps are being taken by the government to narrow the urban-rural income gap through, among other programmes, the provision of better social services in the countryside. But the structural farm problem remains worrisome.

Efforts at curbing population increase through encouragement of family planning do not seem to be yielding the expected results in the desired time span.[8] While it is true that the population growth rate was brought down from 3.7 percent in 1952 to 1.9 percent in 1974, the record of the seventies has been mixed. The 1975 rate was 2.1 percent, rising to 2.6 percent in 1976. A more determined effort will have to be made by the government to make known to the people the need for population control. There are in the offing more potentially troublesome increases and shifts in the demand for food due to a combination of relatively high population growth rates, high income elasticity of demand for food, and rising per capita income.

Table 12. Daily Per Capita Intake of Calories and Proteins

Intake of:	Year		Increase 1975/1952
	1952	1975	
Calories (number)	2,119	2,801	1.3
Protein (grams)	49.3	74.8	1.5

Source: ROC Ministry of Economic Affairs, 1976.

One measure of a country's wealth is the *nutritional status* of the country's people. Table 12 gives data pertaining to calories and protein intake. By the mid-1970's Taiwan's nutritional

Labor Force: Structure, Mobility, and Utilization," *Economic Review,* the International Commercial Bank of China, Taipei, No. 172, July-August 1976, Table 14, p. 32. Since 1961 the terms of trade have moved in a direction adverse to the farmers. Taking 1971 = 100, the general index of prices received and paid by farmers evolved as follows:

	Prices Received	Prices Paid
1961	81.18	189.64
1974	79.08	188.88

7. *Ibid.,* Table 12, p. 31.

8. I suspect that the government to-date has not treated family planning as a top priority for a variety of cultural and political reasons.

standards were among the best in Asia, approaching those of much richer industrialized countries of the West. The FAO considers a daily per capita intake of less than 2.200 calories to be nutritionally deficient; protein deficiency is defined by the FAO as a daily intake of less than 27 grams. Taiwan is confortably above these minima.

Another indirect measure of a nation's wealth is *life expectancy* at birth and infant mortality. Both are functions of factors other than merely nutritional levels. They depend to an extent on the provision of medical services, the pervasiveness of public hygiene, disease eradication, and so on. Life expectancy in Taiwan is among the highest in the world: 67.9 years for men and 72.8 years for women in 1974, compared with 56.5 and 60.7 respectively in 1952. On the Chinese mainland, current life expectancy is estimated at about 50 years (both sexes), which is roughly what it used to be on Formosa in 1936. The infant mortality rate in Taiwan (number of deaths of infants under 1 year per 1,000 live births), which had been 9.88 in 1952, was 4.76 in 1974.

Industrial Production. Industrialization in Taiwan has proceeded rapidly (Table 13); more rapidly than in the PRC. It has also been structurally different. Until 1975 when heavy industries such as petrochemicals, machinery, precision tools, steel, and shipbuilding began to be stressed, the emphasis in Taiwan had been on the development of labor-intensive export and material-processing import industries. Both were predominantly of the "light" type: plywood, electronics, cement, food processing, textiles, footwear, and other consumer goods. The PRC, on the other hand, emphasized early the development of power and capital goods industries, especially during the period 1953-57, and, to a lesser extent, also subsequently. After 1960 the PRC adopted a more even-handed approach to economic development with agriculture as the underpinning of industrial expansion. The one-sided emphasis on heavy industry was to an extent corrected and consumer goods industries received new attention.[9] Table 14 shows the output of selected industrial products in Taiwan, 1952 and 1974.

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9. Cotton cloth production in Taiwan increased sevenfold between 1952 and 1974. In the PRC it doubled. The difference is not explained exclusively by the export importance of cotton fabrics for Taiwan. It reflects to an important degree two different views on the importance of consumer goods.

Table 13. Average Annual Growth Rates of Industrial Production (Percent)

Period	General Index[1]	Mining	Manufacturing	Electricity, Gas and Water
		Total		
1953-64	12.2	7.6	13.1	10.7
1965-74	17.2	2.0	18.3	13.5
1953-74	14.4	5.0	15.4	12.0
		Per Capita		
1953-64	8.7	4.1	9.6	7.2
1965-74	14.6	-0.4	15.7	10.9
1953-74	11.3	1.9	12.3	8.9

1. Includes construction of buildings.

Source: *TSDB 1975,* pp. 2, 71.

Note: Broadly comparable estimated average annual percentage rates for the PRC are as follows:

Period	General	Producer Goods	Machinery	Consumer Goods
1953-65	12	14	17	9
1966-74	8	10*	13*	7
1953-74	11	13**	16**	8

*1966-73.

**1953-73.

Source: R. M. Field, "Civilian Industrial Production in the PRC: 1949-74," in *China: A Reassessment of the Economy* (Washington, D.C.: U.S. Government Printing Office, 1975), p. 150.

Table 14. Output of Selected Industrial Products

Product	Measurement	Years 1952	Years 1974	1974 1952
Coal	1,000 metric tons	2,286	2,934	1.3
Pig iron	1,000 metric tons	10	111	11.1
Steel bar	1,000 metric tons	18	1,029	57.2
Aluminum ingot	1,000 metric tons	4	31	7.8
Crude oil refined	1,000 kiloliters	300	4,789	16.0
Electric power	1,000,000 k.w.h.	1,420	21,913	15.4
Hydro	1,000,000 k.w.h.	1,466*	4,683	3.2
Chemical fertilizer	1,000 metric tons	148	1,465	10.0
Merchant vessels	Gross tons	565	355,743	629.6
General machinery	1,000 metric tons	6	315	52.5
Cotton fabrics	1,000 linear meters	87,639	630,776	7.2
Cotton yarn	1,000 metric tons	14	111	7.9
Man-made fibers	1,000 metric tons	0	273	—
Polyvinyl chloride	1,000 metric tons	0	137	—
Paper	1,000 metric tons	28	463	16.5
Caustic soda	1,000 metric tons	9	90	10.0
Plate glass	1,000 standard boxes	0	2,155	—
Cement	1,000 metric tons	446	6,171	13.8
Electric fans	Sets	9,852	500,922	50.8
Sewing machines	Sets	25,050	1,227,952	49.0
Television receivers	1,000 units	0	4,036	—
Color	1,000 units	0	418	—
Radio receivers	1,000 units	—	12,946	—

*1953.

Sources: *SYROC 1975,* pp. 110*113; *TSDB 1975,* pp. 76*78.

Until the recession of 1974-75, the industrial development of Taiwan was labor-intensive in the main. Since 1975, however, Taiwan has moved visibly onto a capital-intensive developmental route, and mergers of the thousands of small firms producing a wide range of goods are being encouraged. There are several reasons for this reorientation in industrial strategy, one of them being a bothersome labor shortage, especially at the junior-middle or vocational educational level. Labor-intensive industrialization in such a setting implies significant increases in money wages, exceeding in 1974 and 1975 increases in labor productivity by rather wide margins (Tables 15 and 16). It contributed to Taiwan's cost-push inflation and to the lowering of the international price competitiveness of Taiwan's products.

Table 15. Monthly Earnings in Manufacturing

Year	Earnings (NT $)	Index (1973 = 100)
1952	353	13.9
1973	2,538	100.0
1974	3,405	134.2

Source: *SYROC 1975,* p. 176.

Table 16. Direct Labor Productivity in Manufacturing

Year	Index (1973 = 100)
1973	100
1974	105

Source: *SYROC 1975,* p. 180.

But the international competitiveness of Taiwan's industrial products is affected by considerations other than price. Quality of merchandise is becoming an important factor in Taiwan's ability to market its products abroad. Like Japan earlier, Taiwan must address itself to the qualitative dimension of its exports: to the not just cheap, but cheap *and* good.

A restructuring of industry in a more capital- and skill-intensive direction (with a concurrent shift of emphasis toward large-scale producer goods industries) necessitates an adjustment in Taiwan's educational system. Although illiteracy has been

almost wiped out and despite a very important expansion of school and college enrollments (of males as well as females),[10] the educational qualifications of Taiwan's labor force leave room for improvement. Only about 30 percent of the labor force (those 15 years old and over) have a middle school education (15 percent junior middle, 15 percent through senior middle), while 65 percent have finished primary school. College graduates constitute about 5 percent of the labor force.

Labor turnover is high. In some manufacturing firms (1976) it was reportedly as much as 25 percent over a two months' period. Part of the turnover among younger workers (just under one-quarter of the population is in the 15–24 age bracket) is due to workers' dropping out of the labor force to attend school. Some American firms in Taiwan have introduced tuition aid programs which help their workers to go to school in off-work hours. The measure is in part intended to reduce labor turnover.

The property structure of Taiwan's industry is overall predominantly private, but public ownership is important in certain key sectors of the economy, for example, in mining, the provision of electricity, gas, and water, and in some of the heavy industries (e.g., shipbuilding, petrochemicals) currently being accorded developmental priority (Table 17).

Tables 18 and 19 show the changed pattern of primary energy supply and consumption. The most notable change has been the growing importance of petroleum and the decline in the place of coal as a source of primary energy. Almost all the oil used in Taiwan has to be imported from abroad (Saudi Arabia, Kuwait, and occasionally Iraq). The switch to oil together with rapidly rising energy consumption has increased Taiwan's dependence on foreign sources. Whereas in 1954 domestic production of primary commercial energy represented 83 percent of total supply, by 1974 it was only 30 percent. Three nuclear power plants with a combined potential output of 33 billion kwh of electricity are under construction, with completion scheduled between 1977 and 1984.

Foreign Trade. A spectacular growth has occurred in foreign trade. On a per capita basis, between 1952 and 1974, Taiwan's external trade increased 2,013 percent (based on values in current U.S. dollars). Table 20 illustrates the phenomenal expansion of Taiwan's foreign trade. In 1952 Taiwan's total foreign trade

10. In 1952 total student enrollment at the college level in Taiwan was 10,000. Of this number, 1,350 were women. In 1974 college enrollments were 282,170, of whom 102,320 were women.

Table 17. Distribution of Industrial Production by Ownership

Year	All Industry			Mining			Manufacturing			Electricity, Gas, Water
	Total	Private	Public	Total	Private	Public	Total	Private	Public	
1952	100	43.4	56.6	100	71.7	28.3	100	43.8	56.2	100
1974	100	77.5	22.5	100	58.9	41.1	100	83.7	16.3	99.9

Source: *TSDB 1975,* p. 75.

Table 18. Supply of Primary Commercial Energy (Percent of Total Supply)

Year	Total	Coal	Oil	Natural Gas	Hydroelectricity
1954	100	68	22	9	1
1974	100	15	68	9	8

Source: *TSDB 1975,* p. 81.

Table 19. Final Consumption of Primary Commercial Energy by Sector (Percentage Distribution)

Year	Industry & Construction[1]	Agriculture	Transportation	Residential/ Commercial[2]
1954	59	3	9	29
1974	60	5	9	26

1. Including energy sector.
2. Including non-energy uses.

Source: *TSDB 1975,* pp. 85–86.

Table 20. Foreign Trade

	1952	1974	1953–1974
Index			
Exports	100	4,861	
Imports	100	3,725	
Total	100	4,160	
Value (current prices) in U.S. $ millions			
Exports	116	5,639	
Imports	187	6,966	
Total	303	12,605	
Agricultural products exports as percent of total exports	92	16	
Foreign trade turnover per head of population (U.S. $)	38	803	
Average annual growth rate (percent)			
Exports			25.5
Imports			23.6

Source: *TSDB 1975,* pp. 1–2, 172–173.

turnover was roughly 16 percent of the PRC turnover. In 1974 it was about 90 percent. The geographical pattern of Taiwan's trade reveals relatively heavy dependence on the United States for exports and on Japan for imports (Table 21). A greater diversification of markets and supply sources appears to be desirable.

Table 21. Exports and Imports to and from the U.S.A. and Japan (Percent of Total Exports and Total Imports, Respectively, Based on Current Values)

	Exports to:	
Year	U.S.A.	Japan
1952	4	53
1973	38	19
1974	37	15
	Imports from:	
Year	U.S.A.	Japan
1952	22	45
1973	25	38
1974	24	32

Source: SYROC 1975, pp. 138-145.

The rapid growth of Taiwan's external commerce may be attributed to a number of factors which include the diligence of Taiwan's workers, good governmental economic planning and management, political stability, large-scale investments by foreigners and overseas Chinese, and the "seed money" of U.S. aid which amounted to roughly $1.5 billion from 1949 through July 1965 (when it was terminated). The aid helped train in the United States almost 2,000 students from Taiwan. From 1952 through September 1976, 957 investment applications from foreign firms, totaling nearly $1 billion, were approved by the ROC government, in addition to 253 projects amounting to $470 million initiated by overseas Chinese. Foreign investment in Taiwan's economy is facilitated and encouraged by the 1960 Statute for the Encouragement of Investment and the 1962 Statute of Technical Cooperation. American private investment has been important over the years. As of autumn 1976 there were 305 American subsidiaries and affiliates in Taiwan, covering manufacturing plants, commercial undertakings, consulting firms,

shipping companies, and financial institutions, including 13 major U.S. banks.[11] Table 22 summarizes the resultant growth.

Table 22. Summary of Growth Indicators ROC 1973–74
(Annual Average Rate Per Cent)

Gross National Product (real)	8.0
G.N.P. per capita (real)	4.9
Population	3.1
Output of Agriculture	3.4
Output of Agriculture per capita	0.3
Output of Industry	14.4
Output of Industry per capita	11.3
Foreign Trade	
Exports (f.o.b.)	25.5
Imports (c.i.f.)	23.6
Foreign trade per capita (current prices)	22.0

Sources: As in previous tables.

Stability

The objective of stability is taken to be the absence of significant fluctuations in output, employment, and the general level of prices.

Output. The output stability record of Taiwan has been very good until the recession of 1974–75. By 1976, as was noted earlier, the disturbance had been by and large corrected (Diagrams 1, 2, 3). It may be noted that output stability in Taiwan has been superior to what was achieved during the same period in the PRC.

Employment. The employment record has been remarkable (Table 23). The only sizeable and, as it turned out, temporary unemployment among certain categories of workers in the export-oriented branches of industry occurred in 1974–75 as a consequence of the energy crisis and world recession.[12] But even in the midst of unemployment there were specific labor shortages, especially in the area of unskilled female labor. Some analysts

11. Leonard Unger, "U.S.-R.O.C. Economic Cooperation: Past and Prospects," *International Business,* January-February 1977. Also available in *Background on China,* Chinese Information Service, New York, March 9, 1977.

12. No social security system has been established in Taiwan. Unemployed workers depend on family support during periods of unemployment. This is an area of potential trouble, which may have to be attended to soon. Over most of the 1952–74 period, roughly half the unemployed were first job seekers.

Diagram 1

REAL GROSS NATIONAL PRODUCT
(1952 = 100)

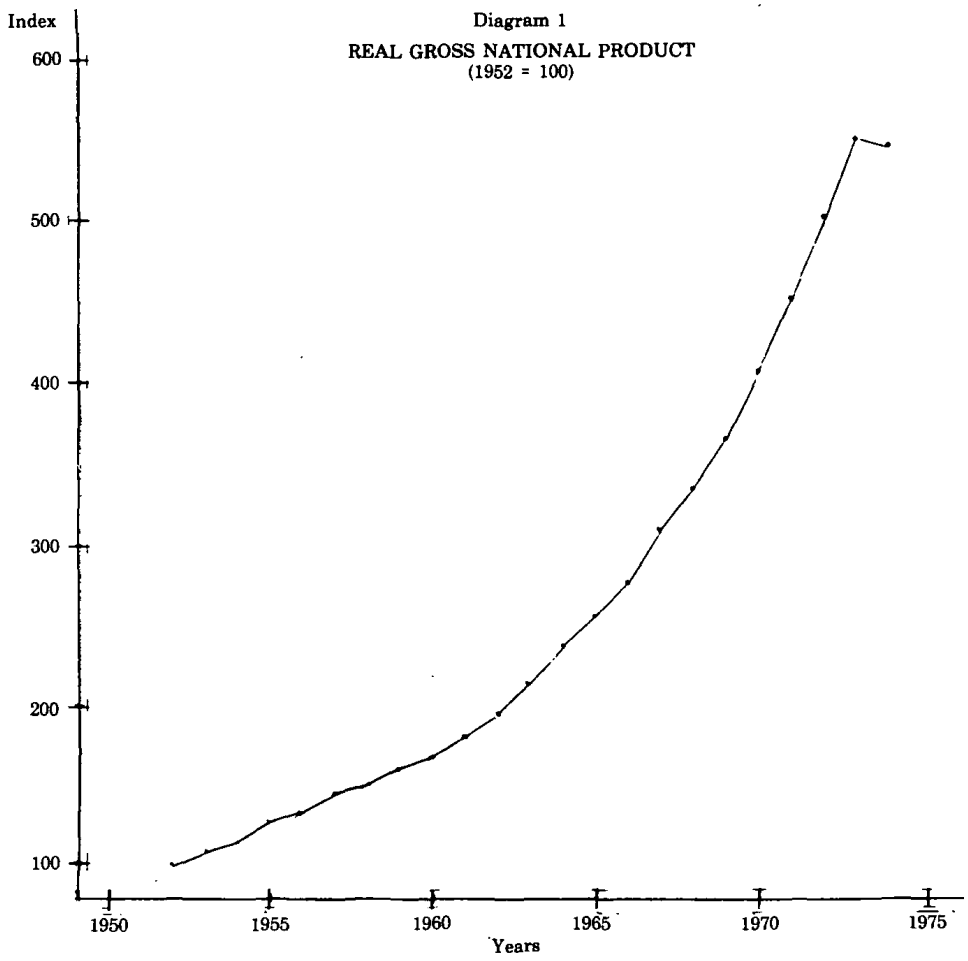


Diagram 2

AGRICULTURAL PRODUCTION
(1952 = 100)

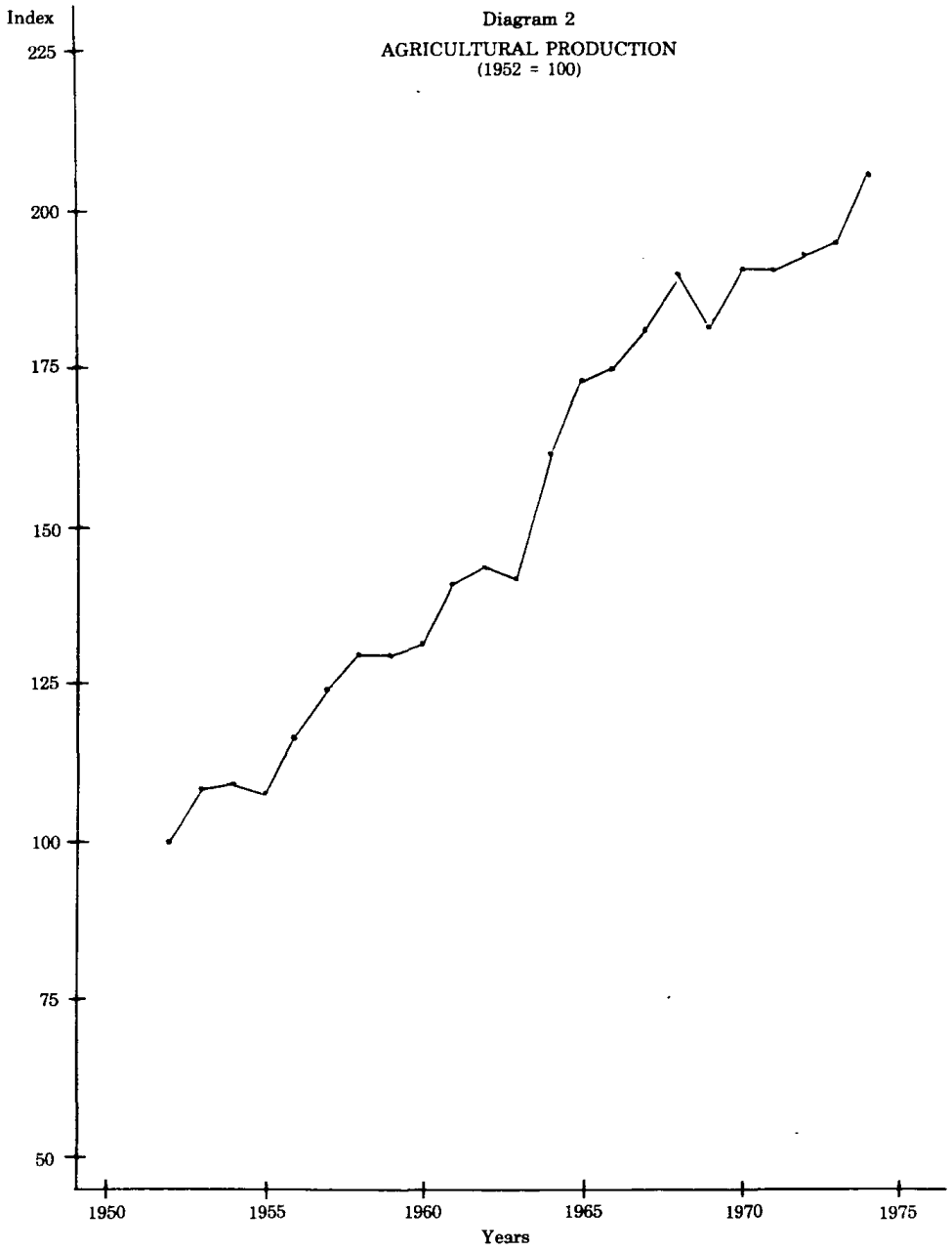
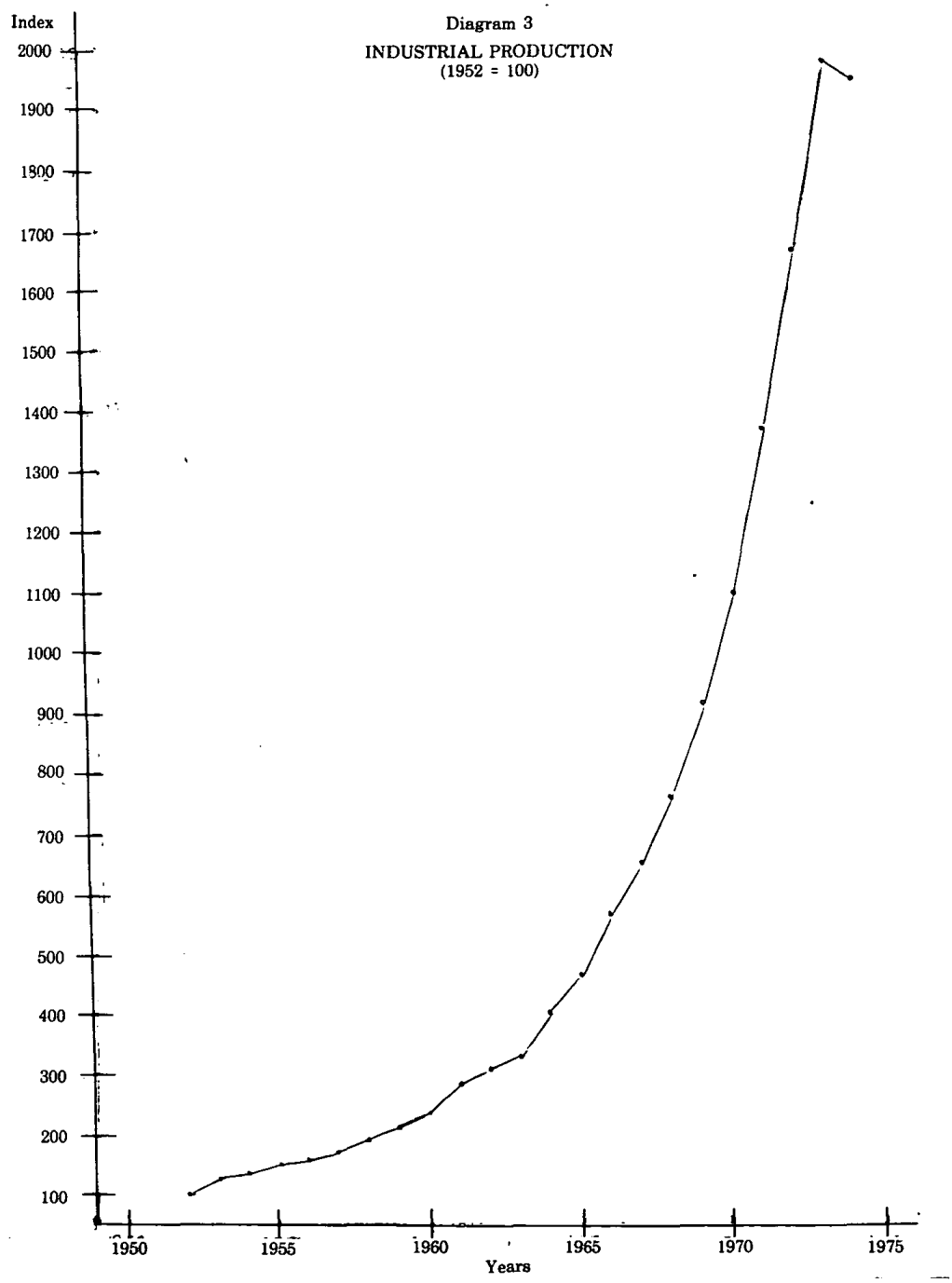


Diagram 3

INDUSTRIAL PRODUCTION
(1952 = 100)



believe that the labor shortage is very largely due to inadequate incentives. Among those 15 years of age and over who did not participate in the labor force in 1976, about 3½ million were classified as potential labor force (the remaining 770,000 were classified as aged or disabled). Almost 200,000 potential workers under 40 expressed readiness to enter the labor force if wages were raised. The economy absorbs annually just about that number of new entrants into the labor force.

Table 23. Average Annual Unemployment Rate (Percent)

Year	Rate (%)
1963*	5.2
1964	4.3
1965	3.3
1966	3.1
1967	2.3
1968	1.7
1969	1.9
1970	1.7
1971	1.7
1972	1.5
1973	1.3
1974	1.5
1975	2.4
1976	1.5

*October 1963

Sources: Statistical Bureau, DGBAS, Executive Yuan, Republic of China, *National Conditions* (various years).

Note: Unemployment figures prior to 1963 are not available since the labor force survey had not been conducted at that time.

Prices. The major upward push on domestic prices came in the early 1970's, especially between 1973 and 1974. Until that time inflationary pressures had been kept fairly well under control and the overall price stability record was respectable for a market-oriented economy sensitive to international trade and price fluctuations. One of the factors which contributed to the relative price stability before 1973-74 had been the system's wage restraint: real wages rose less rapidly than labor productivity. During 1953-63 the industrial real wage rose by 2.6 percent per annum and by 5.4 percent per annum during 1964-73. The rise in labor productivity was 4.7 percent per annum from 1953 through 1963, and 6 percent per annum from 1964 through 1973. The

improvement in workers' real wages during those periods was due to increases in money wages that were faster than increases in the consumer price level. Table 23 shows Taiwan's wholesale and retail price indices, 1952–75. Taking 1971 = 100 the wholesale price index was 180.41 in 1974, declining to 171.26 in 1975, and 178.71 in 1976. The retail price index (1971 = 100) was 164.31 in 1974, 172.90 in 1975, and 177.21 in 1976.

Table 24. Index of Wholesale and Retail Prices (1952 = 100)

Year	Wholesale	Retail
1952	100.00	100.00
1953	108.76	118.79
1954	111.34	120.77
1955	127.02	132.74
1956	143.15	146.69
1957	153.49	157.73
1958	155.63	159.74
1959	171.62	176.62
1960	195.90	209.21
1961	202.23	225.60
1962	208.39	230.93
1963	221.85	235.96
1964	227.33	235.54
1965	216.77	235.39
1966	219.97	240.13
1967	225.52	248.18
1968	232.21	267.75
1969	231.67	281.32
1970	237.96	291.35
1971	238.27	299.56
1972	248.89	302.52
1973	305.79	333.77
1974	429.85	492.47
1953–64 average	7.1	7.4
1965–74 average	6.6	7.6
1953–74 average	6.9	7.5

Source: *TSDB 1975,* p. 157.

Equity

Equity is interpreted here in the relatively narrow and technical sense of "economic justice" to mean the reduction of inequalities in the distribution of income preferably in the setting

of a rising income level; in other words, in the setting of economic growth.[13]

The equity objective as interpreted here has important social, political, and psychological ramifications, many of which elude quantification. Compressing income spreads, especially where these are very wide, tends to (a) cut across and lower social barriers among groups of people ("class differences"), (b) reduce political tensions, and (c) raise the income earners' satisfaction from what they perceive to be greater involvement in the shaping of their working and leisure environments.[14] In short, distributive justice tends to promote economic democracy and, perhaps, political democracy as well.

Equity of income distribution in the environment of growth has been, and remains to this day, one of the primary objectives of Taiwan. The overall objective, as revealed by quintile analysis, has been achieved (Table 25).

Table 25. Income Distribution (Quintiles)

Distribution in Quintiles	1953	1964	1972
First (lowest) quintile of all households	3.0	7.7	8.6
Second quintile	8.3	12.6	13.1
Third (middle) quintile	9.1	16.6	17.0
Fourth quintile	18.2	22.1	22.2
Fifth (highest) quintile	61.4	41.0	39.1
Ratio of income shares: Top 20% to bottom 20%	20.5	5.3	4.6
Gini coefficient	0.56	0.33	0.30

Source: Yuan-Li Wu, "Income Distribution in the Process of Economic Growth of the Republic of China," *Occasional Papers/Reprints Series in Contemporary Asian Studies,* School of Law, University of Maryland, Baltimore, No. 2, 1977, p. 11.

Table 25 shows that there has taken place a progressive and consistent reduction in income differences between the years 1953 and 1972. The equalization objective shows remarkable gains

13. In a more comprehensive sense, equity means (in addition) the reduction of "power-income" differences. Power is the capacity to influence the behavior of others in directions preferred by those who, by reason of their material wealth, inherited advantages, political prerogative, or administrative position are the power-holders. In some economic systems, money income is a poor measure of actual total power exercised by individuals or groups within the system.

14. (c) assumes that the total system is not politically autocratic.

between 1953 and 1964. After that date the rate of change is less, but continues. The table also shows marked improvement over the whole period 1953-1972 in the (absolutely rising) income shares received by the majority of the population (second through fourth quintile, or 60 percent of the population) — the rising "middle class." Data for this class, based on Table 25, are shown separately in Table 26.

Table 26. Income Share of 60 Percent of the Population (Percent of Total Income)

Year	Percent of Income
1953	35.6
1964	51.3
1972	52.3

Source: Table 25.

In comparison with most developing countries, the record of income equalization revealed by Tables 25 and 26 is quite respectable. The 1972 pattern of income distribution in Taiwan was quite similar to that of a number of industrialized countries including the United States and Japan. Professor Wu has demonstrated that in terms of the lowest 40 percent and highest 20 percent of income recipients (per capita GNP), Taiwan in 1972 was a little more "equal" than Yugoslavia in 1968, and a little less "equal" than Poland in 1964.[15] Both Yugoslavia and Poland are economies in which the bulk of the means of production is socially owned (with significant departures in the farm sector). Taiwan is a market-oriented economy with predominantly private ownership of the means of production. The trend toward greater equality in the distribution of income has been particularly marked in the agricultural sector, especially in the fifties. The major contributory cause was the land reform program initiated in 1949 with rent reduction, and followed by the sale of public land and the redistribution (in 1953) of excess private tenanted land to tenant cultivators. Te reform was accompanied by significant increases in farm output so that not only did rural incomes become more evenly distributed but the new owners of land benefited from rising incomes. After 1964 the degree of equality increased more rapidly in the non-farm than in the farm sector and the

15. Y. L. Wu, *op. cit.*, in Table 25, p. 33.

differential between farm and non-farm incomes began to rise, but still in the context of rising income in both sectors. Kuo ascribes the overall trend toward greater equality in the distribution of income since 1949 to several other factors, in addition to the land reform.[16] These include reduction in the "hidden rice tax," increase in the degree of progressiveness of income tax, decrease in the degree of oligopoly, expansion of stock exchange (which provided the small investor with greater opportunities to earn dividends), and rapid economic growth which expanded employment and, in the late sixties, raised labor productivity through the increased use of capital equipment.

CONCLUSION

Our analysis indicates that the four major societal objectives of Taiwan (wealth, growth, stability, and equity) have been achieved between 1952 and 1972–74 with remarkable success. In the space of two decades, Taiwan has moved from the condition of underdevelopment to self-sustained growth, and onto the threshold of a developed, modern, industrialized economy with a socially improved (less unequal) pattern of income distribution.

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16. Wan-yong Kuo, "Income Distribution by Size in Taiwan Area — Changes and Causes," *Economic Review,* the International Commercial Bank of China, Taipei, No. 172, July-August 1976, pp. 12–22, and Han-yu Chang, "Income Disparity Under Economic Growth in Taiwan: Over Time Changes and Degree as Compared with Other Countries," *Economic Review*, No. 178, July-August, 1977 pp. 7–20. See also Martin M. C. Yang, *Socio-Economic Results of the Land Reform in Taiwan* (Honolulu: East-West Center, 1970).

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