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THE ECONOMY OF FORMOSA: PROGRESS ON A TREADMILL

A Letter from A. Doak **Barnett**69-B Robinaon Road
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In the five years since the Chinese Nationalist Government migrated to Formosa, the economy of that small sub-tropical island off the China coast has made remarkable progress. A visitor is struck by the marked improvement in economic stability, the constructive activity which is visible almost everywhere, and the many economic projects being undertaken by the Nationalists with U.S. assistance. The population on Formosa enjoys one of the highest standards of living in Asia, and the economy of the island is productive, alive, and developing. But if one analyzes the basic problems which face the Nationalists, the picture is different. Despite the progress made and plans for future development, some of **Formosa's** economic problems appear to be almost insoluble. The island is now an economic dependency of the U.S. and is likely to remain so for the indefinite future, even though the desire to achieve a self-supporting status is the basis of present economic planning. Although production has steadily risen and may continue to increase, the burden of a large military establishment and an increasing population creates an economic treadmill. The Nationalists must make considerable progress even to maintain their present position, and it is possible that they will accomplish a great deal and still go backwards.

While on Formosa, I made a trip from one end of the island to the other in the company of two leading American economic experts (an industrial engineer and an agricultural specialist) who were stationed there. We stopped in towns, villages, and rural **areas**; we visited power stations, factories, and farm installations, and we talked with government economic **administrators**, businessmen, and farmers. **There** were signs of relative prosperity and economic change all along our route. The **island's** industrial plant is being restored and expanded, and some new industries are being introduced. The farmers are increasing their output, and their incomes. In almost every town and village there is commercial or residential building underway. Transport has increased, with improved roads and new trucks and buses. Locally-made bicycles, farm girls' lipstick and permanent waves, small hand or power machines in shops, electric water pumps in the rice fields,

rural carts with rubber tires, and poolhalls in almost every village are visible signs of a standard of living considerably above that prevailing on the mainland of China. After a serious slump during the immediate postwar years and in the period when Nationalist refugees first flooded the island, the economy of Formosa has revived (with large injections of U.S. aid).



CAPITAL CITY OF TAIPEH

The standard of living has risen toward past levels attained under Japanese rule and relative economic stability has been restored. But despite these facts the future of the island is uncertain.

Agriculture is the foundation of the Formosan economy and at present provides over two-thirds of the island's national income, even though the importance of industry is rising. Roughly one-half of the population is engaged in agriculture, over 90 per cent of the island's exports are made up of agricultural products, and over 40 per cent of its imports are composed of agricultural commodities and industrial products, such as fertilizers, which are required to maintain agricultural output.

During the past few years, agricultural production has been raised from postwar lows to peaks which in some key items have far surpassed prewar records. Rice is an outstanding example. The 1934-1938 average annual production of rice was 1,338,000 tons, and production during the peak year--1938--was 1,402,000 tons. In 1945, rice output fell to 639,000 tons, but since then it has steadily risen--to 1,215,000 tons in 1949, 1,642,000 tons last year, and an estimated 1,700,000 tons this year. The number of hogs on the island (three million) is now over 50 per cent higher than the maximum prewar figure. The annual output of fisheries, estimated at 145,000 tons this year, is considerably above the past peak level.

The increase in industrial production on Formosa is also impressive. Using 1941 (the peak year under Japanese rule) as a base of 100, over-all industrial production had risen by last year to 140, and the production index figure for many important individual industries was even higher (power 151, transport 193, chemicals 208, fertilizers 581, etc.).

The general rise of production levels--has been the result of a successful program of economic rehabilitation and development, credit for which must go to both the U.S.



A VILLAGE

and the Nationalist Government. The U.S. has poured a sizable amount of economic aid into the island. It has averaged about **US\$100** million a year (not including direct military aid). The U.S. has also carried out a successful program of technical assistance through a unique Sino-American organization (The Joint Commission on Rural Reconstruction) in the agricultural field, and through an outstanding private American engineering firm (the J.G. White Company) in the industrial field. The Nationalist Government, with a larger concentration of competent technical skills in a smaller territory than it has ever had before, has used American aid and technical assistance **with** considerable effectiveness.

Unfortunately, however, the process of economic rehabilitation and the rise in production levels have been accompanied by extraordinary economic problems and burdens. About **two** million persons, a large percentage of whom were nonproductive soldiers and bureaucrats, came with the Nationalist Government from the mainland to Formosa. The island, which has an area of only 13.8 thousand square miles and a population of about 10 million, must now support a military establishment of roughly 600,000 men.

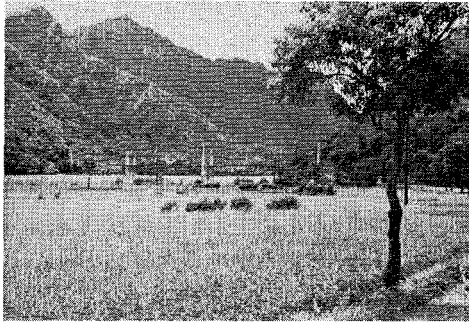
During the first years after the **Nationalists'** arrival, the basic economic problem facing the regime was a simple one: survival. From 1949 to 1951 the wholesale price index rose 4.5 times, and the threat of runaway inflation was serious. In this period, American aid provided millions of dollars worth of basic commodities such as raw cotton, fertilizers, soybeans, petroleum, grains and oils, as well as needed machinery and vehicles, and helped the Nationalist Government to solve imbalances in both its international payments and local budgets.

As a result, by 1952, although the threat of inflation was not entirely eliminated, enough economic stability had been achieved for the government on Formosa to begin thinking of **development** rather than mere survival. In that year a Four Year Economic Plan was drawn up with close American cooperation. The Plan has subsequently undergone a great deal of revision, but it is still the basis of government policy.

The main aim of the Four Year Plan is to work toward an economically self-sustaining economy for the island by increasing both agricultural and industrial production. "It is hoped," says the introduction to the latest version of the Plan, "that after the full implementation of the Four Year Plan, we shall be able to approach a state of self-support and reduce our dependence upon foreign **aid.**"

This task is such a formidable **one**, however, that there is little prospect of the basic aim being fully achieved in the foreseeable future, even though the Plan is unique in that it has no final **terminal** date and is revised annually so that every year there are four-year projections of production plans and goals.

In the field of agriculture, the intent of the Plan is to raise production of agricultural commodities sufficiently to keep up with the ever-increasing population; to stabilize prices of agricultural goods; to increase exports and reduce imports of agricultural products; and to improve the livelihood of the farmers. (A successful land redistribution program has already helped the farming population a great deal. The compulsory sale of almost 150,000 hectares of landlord-owned fields to tenants has reduced tenancy from 39 per cent to 15 per cent of all arable land.)



RICE LAND



IRRIGATION

The possibilities of increasing agricultural output are definitely limited, however. Already there are **872,738** hectares (a hectare is 2.47 acres) of land in cultivation on Formosa, as compared with a prewar maximum of 860,000, and there is very **little** unused arable territory. Perhaps 120,000 hectares of land now under dry cultivation can be irrigated and made more productive, and a few thousand hectares can be reclaimed, but the utilization of land is already approaching its optimum point. Any substantial increase in production now must be accomplished by improving the per-hectare yield. This can be done by increasing the use of fertilizers and pesticides, by improving the irrigation and drainage of lands, and by improving the methods of drying and storing crops. Development of technical advisory services, credit facilities, and the marketing system can also help to increase the total production. Yields per hectare are **still** somewhat below prewar peaks (rice, for example is 94 per cent of the record average yield, while sugar is 88 per cent), and agricultural experts on the island estimate that **it** may be possible **to** increase per hectare yields by 10 to 50 per cent, depending on the crop (19 per cent for rice). The Four Year Plan calls for an increase of rice output from 1,654,000 tons in 1953 to 1,850,000 tons in 1956 and a rise of sweet potato production from 2,064,000 tons in **1953** to 2,580,000 tons in **1956**, but during the same period sugar cane output is scheduled to drop from 882,000 tons to 714,609 tons. (Sugar acreage has been **reduced** in recent years.)

The inescapable fact, however, is that although there is a limit to the amount which the land can produce, there is no comparable limit to the number of new babies which can be produced by the persons inhabiting the land. Agricultural production

on Formosa is steadily rising toward a ceiling, but the population is expanding with no checks yet in sight,

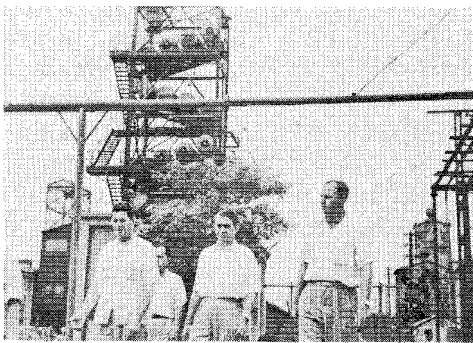
The role of agriculture in the Formosan economy, furthermore, is not only to feed the inhabitants of the island but also to pay for essential imports. It is becoming increasingly difficult to Formosa's farmers to fulfill this role. Even though the island still has an agricultural surplus, which provides over 90 per cent of its exports, the export surplus has steadily declined as the population has increased. Under Japanese rule, for example, Formosa produced about 1.4 million tons of rice and was able to export roughly 600 thousand tons; now the island's output is 1.7 million tons, but it can only export about 100 thousand tons. Sugar exports also have declined, partly as a result of the vagaries of the international market. The balance-of-payments problem is one which now constantly plagues the economic planners on Formosa. Whereas before the war the island had an average export surplus of perhaps US\$70 million annually, last year it had a deficit of about US\$60 million (not counting strictly military imports paid for by the U.S.), and the gap was filled by U.S. aid. One reason for this radical change in the island's international balance of payments--in addition to the population increase, which is the most important cause for the change--is the alteration of Formosa's trade position. Until 1945, the island was integrated into the Japanese Empire, and about 98 per cent of its trade was with Japan. Now, although about 45 per cent of Formosa's trade is still with Japan, the island faces a new problem of competing on the international market to find outlets for a large proportion of its exports.

The current program of industrialization under the Nationalists' Four Year Plan is directed primarily toward the problem of closing the gap in the island's international balance of payments. The Plan calls for investment by 1956 of roughly US\$155 million and NT\$2.5 billion (local currency, the official exchange rate for which is US\$1.00 to NT\$15.55) to expand industrial production, particularly in those fields which can increase exports and decrease imports. The value of over-all industrial production is scheduled to rise by close to 50 per cent from 1953 to 1956, and by 1956 it is hoped that the value of industrial production will be closer to par with the value of agricultural production in the island's economy. The electric power industry is receiving top priority. At present there are 33 power stations on Formosa with a combined capacity of 330,000 kw; it is planned to almost double the capacity before the end of 1956 by adding 300,000 kw. Development of chemical fertilizers, which are vital to agriculture on Formosa and at present comprise the third largest item of imports into the island, comes next. It is planned that by 1956 Formosa will approach self-sufficiency in this important field. The Four Year Plan also calls for expanding the production of numerous other industries, including wheat flour, soda ash, refined oil, pulp and paper, plywood, aluminum, and so on.

But in the best of circumstances it is not easy for a small island with a large population to attempt to achieve a self-

supporting status. Many key raw materials and commodities must be imported, even to supply developing industries. From 1949 to 1953 Formosa increased its cotton spindles from a few thousand to about 175,000 (most of which are privately owned), and it is now self-sufficient in yarn output; but it must still import all of its raw cotton, and last year cotton was the largest single item on the import list, comprising about ten per cent of total imports. The number of hogs--which provide pork, the principal meat consumed on Formosa--has increased greatly; but soyabeans to feed them still make up close to ten per cent of total imports and are the second largest import item. Output of aluminum and gasoline has been raised to a point where the island produces an export surplus, but bauxite must be imported from Malaya and crude oil from the Middle East.

If Formosa were not a refuge for the Nationalist Government and two million of its civilian and military supporters, the island might be able to solve its own economic problems, but it is difficult to see how it can solve them at present.

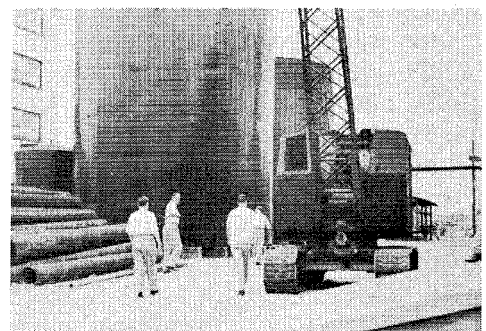


CHEMICAL PLANT

In 1938 Formosa's population was about 5.8 million. Now, including the two million refugees from the mainland, the people it must support total roughly ten million. In about ten years the population of the island has almost doubled. Furthermore, the net increase in population amounts to three per cent or more a year, as a result of improved medical facilities and the absence of birth control. Within a generation--20 to 25 years--the present population of Formosa will double. Yet to date no

effective policy of population control has been evolved on the island, and the military authorities, who are concerned about future recruits for the army, oppose serious consideration of birth control. (Only a small minority of Nationalist leaders, in fact, recognize that they face a frightening population trend.)

In addition to this basic population problem, Formosa now must bear a tremendous military burden. On an island with a population of ten million, there are 600,000 men in uniform who must be fed, housed, and supplied. It is estimated that government organs of all levels on Formosa take in roughly one-fifth of the national income of the island, and that three-quarters of this goes to the military. (Eighty-three per cent of the Central Government's budget is devoted to military purposes.)



FERTILIZER PLANT

FORMOSA—SELECTED ECONOMIC STATISTICS

Trends in Production of Rice and Sugar (In thousands of Metric Tons)

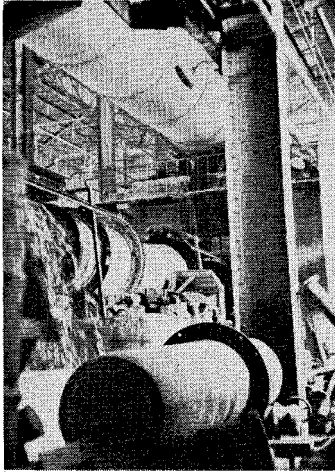
	Rice	Sugar
1934-38 (average)	1,338	-
1936	1,365	7,914
1938	1,402	(Prewar Peak) -
1939	-	(Prewar Peak) 12,822
1945	639	4,159
1949	1,215	6,194
1952	1,570	4,801
1953	1,642	8,394
1954 (goal)	1,760	6,521

II. Major Agricultural Crops (1952)

	Acreage (hectares)	Yields (Kg per ha)	Production (tons)
Rice	785,729	1,998	1,570,115
Sweet Potatoes	233,502	8,953	2,090,463
Wheat	14,582	1,139	16,604
Peanuts	80,975	741	60,037
Soyabeans	24,315	602	14,627
Sugar Cane	94,247	6,986	520,453
Bananas	17,092	6,819	106,856
Tea	42,405	273	11,582
Pineapples	5,849	10,731	62,760
Citrus	4,611	6,023	27,770
Citronella	18,000	100	1,800
Jute	17,500	1,241	21,724
Tobacco	5,530	1,621	8,989

III. Selected Examples of Comparative Agricultural Yields (Kg per ha)

	(1) 1934-38 Average	(2) Highest Prewar	(3) Highest Postwar	(3) as % of (2)	(4) Present Goals
Brown Rice	2,024	2,242	2,109	94%	2,500
Sweet Potatoes	12,049	12,828	9,698	76%	13,000
Peanuts	956	1,008	741	74%	1,000
Sugar	9,111	10,239	9,009	88%	10,000
Tea (crude)	278	487	305	63%	500
Bananas	9,761	11,617	8,052	69%	12,000
Pineapples	12,889	14,251	12,076	85%	14,000



ALUMINUM PLANT

this would be the cheapest form of unemployment relief.

With the existing population trends and the military situation, the economy of Formosa will just hold its own if current development plans are implemented and U.S. military aid is continued. Under the present Four Year Plan, which does not take into consideration direct American aid to the Nationalist military establishment (amounting to over US\$200 million a year, or double the "economic aid"), the average per capita income of Formosa will be slightly less in 1956 than it was at the start of the Plan, despite the impressive increases in production which are projected. In short, the continuing burden of military expenditures and the increasing size of the population will counterbalance the production gains.

Theoretically, production might get ahead in the race with population if the present level of investment in economic development were greatly increased; this does not now seem possible, however. The principal investments in Formosa's current economic development come from the U.S. taxpayer through the American aid program, and it is unlikely that the already sizable program of U.S. economic aid will be increased. The Nationalist Government would like to attract more foreign private capital, and within the past year it has liberalized laws concerning investment and repatriation of profits, but the whole economic atmosphere on the island is one of government planning and control, which discourages private investors. Two-



PLYWOOD PLANT

It is easy for a critic to say that the **military** establishment of the **Chinese** Nationalists should be reduced, but there is little prospect that this can or will be done. Even if one ignores the fact that a strong defense force is required by the island in the present situation, the economic possibilities of demobilization are discouraging. The island already has a **serious** unemployment and underemployment problem, and even if present economic plans are implemented, the possibilities for creating new jobs are limited. Economic planners in the government say that if military demobilization **were** an aim of the **regime** (which it is not), the government would still probably be forced to keep most of the soldiers in the army, because

thirds of Formosa's industrial output comes from government-owned enterprises; 54 state economic enterprises (four of which are being turned over to ex-landlords as part of the land reform program carried out on the island) employ 137,000 persons, including a sizable proportion of all industrial workers. To date, only 50 Overseas Chinese investors (whose investments--three-quarters of them from Hong Kong--total US\$3.5 million) and a handful of other foreign investors (whose investments, including long-term loans for payment of equipment sold to Formosa, total US\$11.6 million) have been attracted to the island, and the rate of private foreign investment is discouragingly low.

The island of Formosa and its Chinese Nationalist rulers therefore find themselves on a treadmill. They are making commendable economic progress, but they are not really getting anywhere, because the military burden which they must carry and the **population** problem with which they are saddled eat up the production increases which they achieve,

From the U.S. point of view, Formosa is an economic dependency and is likely to remain one for the indefinite future. Even **if** implementation of the economic plans of the Nationalist regime reduces the amount of American aid required to support the island and its military forces, the possibility of **Formosa's** achieving a completely self-supporting status is remote. Certainly at present the alternative to continuing **U.S.** aid is either economic chaos, or real economic hardship, or both,

A. Doak Barnett

IV. Selected Agricultural Production Goals (1953-1956)

	1953 (Goal)			1956 (Goal)		
	Ha.	Tons	Kg per ha	Ha.	Tons	Kg per ha
Rice	795,000	1,654,000	2,080	835,000	1,850,000	2,216
Sugar Cane	108,000	882,000	8,167	91,140	714,609	8,412
Sweet Potatoes	240,000	2,064,000	8,600	215,000	2,580,000	12,000

V. Industrial Production Index (1941 = 100)

Industry	1937	1941	1949	1953
Power	56	100	83	151
Transport	61	100	145	193
Chemicals	84	100	91	208
Fertilizers	85	100	139	581
Food Processing	106	100	72	118
Metal & Machinery	49	100	46	79
Mining	75	100	56	88
Textiles	67	100	174	1,085
Timber	58	100	53	116
All Industry	79	100	74	140
Per Capita--All Industry	88	100	57	88

VI. Postwar Increase of Industrial Production--Selected Examples

	1946	1949	1952	1953
Power (1,000 kwh)	472,002	854,300	1,420,313	1,564,341
Sugar (M. Tons)	86,074	631,346	520,453	882,141
Cotton Yarn (M. Tons)	410	1,805	13,576	19,545
Paper (M. Tons)	2,585	9,066	24,197	24,428
Calcium Super phosphate (M. Tons)	1,639	31,830	62,065	69,145
Calcium Cynamide (M. Tons)	3,204	14,010	68,070	73,242

VII. U.S. Aid to Industry

	Direct US\$ Aid Amount Delivered	Counterpart Funds Local Currency Used
1950 (Fiscal Year) US\$	3,288,000	NT\$ 6,517,000
1951	18,657,000	16,855,000
1952	15,991,000	202,545,000
1953	11,978,000	74,070,000

VIII. Tentative Estimates of Capital Requirements for Industry
(1953-1956)

	NT\$		US\$	
Mining	143,621,000	(6%)	4,200,000	(3%)
Manufacturing	1,180,528,000	(46%)	89,570,000	(58%)
Power	791,511,000	(31%)	34,141,000	(22%)
Transport—	420,139,000	(17%)	26,776,000	(17%)
Communications				
Totals	2,535,799,000	(100%)	154,687,000	(100%)

IX. Estimates of Industrial Production (Value) During 1953-1956

1953 - NT\$	6,597,000,000
1954 -	7,047,000,000
1955 -	7,993,000,000
1956 -	9,426,000,000

X. Tentative Estimates of Over-all National and Per Capita Income
(1952-1956)--(Converted to value of T\$ in 1937)

	1952	1956
Net National Output	T\$ 807,000,000	T\$ 1,026,000,000
Net Income from Abroad	160,000,000	49,000,000
Net National Income	967,000,000	1,075,000,000
Per Capita Income	121	119

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Sources for above statistical data:

Economic Data Book, Taiwan Monthly Production Data; Office of Assistant Director for Industry, FOA Mutual Security Mission to China (January 1954, July 1954).

Four-Year Plan for Economic Development of Taiwan, Agricultural Section; Economic Stabilization Board, Executive Yuan (January, 1954).

The Industrial Program Under the Four Year Economic Development Plan; Industrial Development Commission (June 30, 1954).