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TAIWAN - A CASE STUDY IN SUCCESSFUL ECONOMIC DEVELOPMENT

by

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by

Irma Adelman

I. INTRODUCTION

Taiwan's economic achievements in the post-reconstruction period have been outstanding. From 1953-61 GNP in real terms increased by 7% a year, industrial production rose 120% and manufacturing exports expanded by a factor of 140. Foreign assistance has played a crucial role in this process. During this period, net foreign capital inflows have constituted between 25 to 52 percent of gross capital formation, and have financed from 34 to 64 percent of total imports. Thus, Taiwan has had both the benefits of high levels of foreign aid and the problems associated with their profitable absorption. The purpose of this paper is to gain an insight into assistance-propelled growth, with Taiwan's recent history as a vehicle, and to investigate the adjustment policies which Taiwan might pursue in the future in order to minimize the impact of the impending gradual phase-out of U.S. aid upon the rate of growth of the Taiwanese economy.

Because of the dualistic character of foreign aid as both a supplement to local savings and as a source of foreign exchange, a given rate of growth of per capita income can generate two ex ante foreign capital requirements:

(1) the amount of foreign capital necessary to augment local savings in order to maintain a specific rate of growth of per capita income, and

(2) the amount of foreign aid which will just balance the projected discrepancy on current account, again for a specified rate of growth.

These two projections generally differ, and the natural procedure is to choose the larger of the two prospective foreign aid requirements, in order that neither constraint prevent the economy from achieving the specified rate of growth. In this process, either more foreign capital

is supplied than necessary, given the savings propensities and investment requirements, or else more foreign capital is available than is needed to satisfy the balance of payments obligations.

Since the two gaps must be equal in the ex post accounting, unplanned adjustments must take place in practice to bring the two gaps into line. Typically, the adjustment of a smaller savings-investment gap to a larger balance of payments gap, normally takes the form of a reduction in domestic savings and the accumulation of unplanned inventories or idle balances. In an analogous fashion, if the balance of payments gap is increased to meet the savings-investment imbalance, the result is usually unnecessary imports, the accumulation of foreign exchange reserves, smaller exports than possible, or an overvalued exchange rate.

In either case, in the absence of planned adjustments, the process of consolidating the two ex ante foreign aid gaps into a single ex ante foreign aid requirement (which with perfect prediction, becomes the ex post foreign aid contribution) results in a waste of foreign resources. In practice, the two constraints are not independent of each other; the interaction between them can, in fact, be used to reduce the binding gap to a level which corresponds more closely to the other.

To permit the analysis of more nearly optimal adjustment policies to an anticipated reduction in U.S. foreign assistance, a model was constructed which incorporates what appear to be the most important mechanisms which relate an imbalance between the planned and the actual savings-investment gap to the actual foreign exchange gap. One example of this is that, if the balance of payments constraint is binding, the excess savings can be used to finance an investment program in export industries and in import substitution industries in order to reduce the pressure upon the economy's balance of payments in the future.

The model is designed to be as realistic as possible. In particular, in the model as in real life, a variation in the level and composition of investment has an immediate impact upon the balance of payments. Another useful feature of the model is that it is also rich in policy parameters; one may control the fraction of capital imports and maintenance imports, the percentage of manufacturing investment,

the level and incidence of taxes, and either the level of foreign aid or the target level of GNP. The use of this model to study the relative effectiveness of various policy measures for adjusting to a reduced allotment of foreign assistance may therefore prove instructive.

II. THE STRUCTURE OF THE MODEL

A. General

To explore the relative efficiency of alternative policy measures for successful transition to self-sustained growth a number of elements of a general equilibrium system must be considered. The most important of these are the structural and behavioral determinants of savings, imports, exports, and investment.

The model chosen to analyze the optimal adjustment process to a decreasing level of foreign assistance consists of a set of disaggregated functions which describe economic behavior in four spheres of activity: (1) private and government savings; (2) private and public gross capital formation; (3) imports of goods and services; and (4) exports of goods and services. The statistically estimated portion of the model also incorporates three functions which describe government tax collection and transfer payment policy. These are supplemented by a set of a priori (nonstatistical) equations to describe sectoral depreciation and raw material import requirements. The model is complemented by a set of nonstatistical accounting definitions, a balance of payments equilibrium condition, and, a savings-investment equilibrium condition.

No production functions were included in the final form of the model, since, in the absence of data on the rate of utilization of the capital stock, no meaningful production relationships could be derived. Instead, the character of production is described implicitly in the investment functions. While this procedure does not reflect the impact of labor constraints upon production, it was felt that the poor quality of existing data gave us no reasonable alternative. The careful reader will probably also notice a number of other omissions of this type. These were, in general, conscious, as preliminary experimentation with other potentially explanatory variables indicated either that they did not contribute to the quality of the statistical fits to the historical data or that the statistical results did not make economic sense. A prominent example of these kinds of omissions can be found in the complete absence of monetary and price variables.

B. The Savings Functions

For purposes of this analysis savings were disaggregated into private and government savings. As usual, private savings were assumed to be a function of disposable income and government savings of government revenue. However, since the model was designed primarily to display as accurately as possible the effects of planned adjustment policies for equating the savings-investment gap with the import-export gap, the savings functions include certain additional foreign trade variables. Thus, private savings depend not only on disposable income, but also (negatively) on the level of imports of consumer goods and (positively) on the level of imports of capital goods. While the latter effect is a reflection of the greater incentive to save generated by an increase in investment opportunities, the former portrays the well-known tendency for domestic savings to leak into the consumption of foreign products. Similarly, government savings were assumed to have a direct dependence upon net foreign capital inflows, as well as their normal variation with revenues from domestic sources.

C. The Investment Functions

The pattern of behavior of private and government decision makers in carrying out capital expenditures is represented in the model by six separate investment functions. Five of these describe fixed capital formation in each of the following sectors of the economy: primary industry; manufacturing; construction, utilities and transport; trade and banking; and "other." In addition, a separate function is used to describe investment in inventories. Generally, all the fixed capital formation equations are of a capacity accelerator variety. That is, they depend positively on the current value of the output of the appropriate sector and negatively on the lagged value of its capital stock.

Additional explanatory variables were included in several equations. Thus, since much of primary output in Taiwan is exported primary investment is assumed to be a function of the value of current exports. Similarly, since the domestic production of machinery and transport equipment is still rather low in Taiwan, fixed investment in the transport and utility sector and fixed investment in manufacturing are also made to reflect the level of capital goods imports in the previous period.

Finally, an attempt was made to include the effects of the rate of utilization of capacity upon manufacturing investment. For this purpose, a surrogate variable was added to the investment function for manufacturing. This proxy variable is the difference between the actual level of imports of raw materials, fuels, semifinished products, and other intermediate goods and the level of such imports required for adequate employment of the economy's productive capacity; it was chosen because of the well-known dependence of the rate of capacity utilization upon the imports of intermediate products in underdeveloped economies. The "required" level of intermediate imports was estimated by multiplying each year's gross domestic product by the 1951-62 average ratio of such imports to the gross domestic product.

For the inventory investment function, a distributed lag formulation was used; it includes the value of the gross domestic product and the value of inventories in the previous period as the independent variables.

D. The Import Functions

Total imports are divided into four major categories: consumer goods, intermediate products, machinery and transport equipment, and services. To reflect the effects of changes in the composition of GNP, upon import requirements, each class of imports of goods was assumed to depend upon private plus government consumption, and, except for imports of consumer products, upon gross domestic investment. In addition, the result of past investments in import substitution were reflected, where appropriate, by including the sum of lagged investment in manufacturing during the two preceding years.* By contrast, imports of services were taken to be simply a linear function of time.

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* Lagged averages over longer periods were tried for this term, but the extension in time period did not appear to affect significantly either the magnitude of the coefficients of other variables in the equation or the coefficients of the lagged annual investment in manufacturing. The shortest period was preferred despite its lack of economic realism since the lengthening of the period of the moving average reduces the already very small number of degrees of freedom.

E. The Export Functions

Three categories of exports were distinguished: exports of manufactured products, exports of non-manufactured products, and exports of services. Each of these components is expressed as a function of time. In addition, however, manufacturing exports also include a term which is intended to represent the effects of investment in export expansion. As in the import equations, the variable chosen to portray this effect is the sum of the past two years' investment in manufacturing.

An analogous term in the non-manufacturing export equation, a moving average of primary investment, was tried but dropped, since it did not appear to help explain the movement of exports through time.

F. The Tax Functions

Two additional policy functions, one for direct tax and transfer payments and the other for indirect taxes minus subsidies, were fitted statistically as linear functions of the gross domestic product. These tax variables are assumed to be readily subject to policy manipulation; therefore the functions used are not considered to be integral components of the model.

G. The A Priori Equations

Both sectoral gross investment and sectoral net capital formation appear as endogenous variables in the model; it therefore becomes necessary to treat sectoral depreciation charges as separate endogenous variables. Since no disaggregated estimates of depreciation were available, a set of a priori coefficients was chosen, based on reasonable lifetime estimates for each capital stock of each industry. These approximations were checked against the aggregate depreciation series, to which they corresponded remarkably closely.

Similarly, an a priori equation is provided for the estimation of the capacity level of intermediate imports. As explained in Section D, this coefficient was set equal to the ratio of total intermediate imports to total gross domestic product for the period.

H. The Policy Equations

To permit an analysis of the effects of future structural changes in the composition of the gross domestic product upon, say, the economy's rate of growth as the level of foreign capital inflow is reduced, the sectoral composition of the gross product is assumed to be a variable subject to policy manipulation. A set of policy equations which specify the percentage of the aggregate domestic product originating in each sector is therefore incorporated into the model.

I. Definitions and Identities

In addition to the usual accounting identities which express savings, investment, depreciation, exports, gross domestic product, imports, and taxes as the sum of their component parts, the model includes definitional equations for the gross domestic product and for disposable income. Three equilibrium conditions are also specified for the system: (1) a balance of payments conditions, which says that the difference between imports and exports of both goods and services is precisely the net foreign capital inflows; (2) a savings-investment condition, which requires that the difference between domestic investment and domestic savings be equal to net foreign capital inflows; and (3) a set of dynamic relationships which state that the capital stock of each sector at the end of each period is the sum of the capital stock at the end of the previous period plus the net capital formation during the period.

III. THE DATA

The basic data required for the analysis are taken mainly from various issues of the U. N. Yearbook of National Accounts Statistics, although collateral sources, such as the Taiwan Statistical Data Book and the U. N. Yearbook of International Trade Statistics, were used as well. The time period chosen was 1951 to 1962, since a reliable statistical description of the economy before that date does not appear to exist. The detailed data and the sources are contained in the Appendix.

IV. THE STATISTICAL RESULTS

A. List of Variables

S = Gross savings.

S_g = Government savings.

S_p = Savings by households, nonprofit and private enterprises.

$(C+G)$ = Private plus government consumption expenditures.

I = Gross domestic capital formation.

I_p = Fixed capital formation in the primary sector (agriculture, forestry, hunting, fishing and mining and quarrying).

I_m = Fixed capital formation in manufacturing.

I_c = Fixed capital formation in construction, gas, electricity and water, and transport, storage and communication

I_s = Fixed capital formation in commercial services (wholesale and retail trade and banking, insurance and real estate).

I_o = Fixed capital formation in the ownership of dwellings, public administration and defense and other services.

I_i = Increases in inventory stocks.

V = Gross domestic product.

V_p = Gross domestic product in the primary sector.

V_m = Gross domestic product in manufacturing.

V_c = Gross domestic product in construction, gas, electricity and water and transport, storage and communication.

V_s = Gross domestic product in commercial services.

V_o = Gross domestic product in the ownership of dwellings, public administration and defense and other services.

D = Depreciation.

D_p = Depreciation in the primary sector.

D_m = Depreciation in manufacturing.

D_c = Depreciation in construction, gas, electricity and water and transport, storage and communication.

D_s = Depreciation in commercial services.

D_o = Depreciation in the ownership of dwellings, public administration and defense and other services.

K_p = End of year capital stock in the primary sector.

K_m = End of year capital stock in manufacturing.

K_c = End of year capital stock in construction, gas, electricity and water, and transport, storage and communication.

K_s = End of year capital stock in commercial services.

K_o = End of year capital stock in the ownership of dwellings, public administration and defense.

X = Exports of goods and services.

X_{nm} = Exports of non-manufactured goods (SITC 0-4).

X_m = Exports of manufactured goods (SITC 5-9).

X_s = Exports of services.

M = Imports of goods and services.

M_c = Imports of consumer goods (food and live animals, beverages and tobacco, automotive passenger cars, miscellaneous manufactured articles and other imports) (SITC 0, 1, 732.1, 8 and 9).

M_i = Imports of intermediate products (crude materials, inedible, except fuels; mineral fuels lubricants and related materials; animal and vegetable oils and fats; chemicals; manufactured goods classified chiefly by material (SITC 2-6).

M_i^* = Imports of intermediate products for adequate utilization of manufacturing capacity.

M_m = Machinery and transport equipment (SITC 7 excluding 732.1).

M_s = Imports of services.

F = Net foreign capital inflows.

R_g = Government revenues from domestic sources (taxes, transfer payments and government enterprises).

T = Total taxes.

T_i = Indirect taxes minus subsidies.

T_d = Direct taxes and transfer payments.

Y = Disposable income.

t = Time in years measured from 1951 = 1.

The economic variables in this list are all measured in millions of current New Taiwan (NT) dollars. Whenever no time subscript is specified, the contemporary value of the variable is used. Lags are denoted by subscripts which indicate the length of the lag, in years.

The only exogenous variable in this model is time; the predetermined variables are

$$\left(I_{m_{-1}} + I_{m_{-2}}\right),\ M_{m_{-1}},\ \left(M_i - M_i^*\right)_{-1},\ K_{p_{-1}},\ K_{s_{-1}},\ K_{c_{-2}},\ K_{m_{-2}},\ \text{and}\ I_{i_{-1}}$$

B. The Estimated Equations

The stochastic equations for the model are listed in Section C below. In accordance with the usual conventions, the standard errors of the coefficients are listed in parenthesis below each coefficient, and R^{-2} represents the value of the coefficient of multiple determination adjusted for degrees of freedom. In addition, a measure of the serial correlation of the residuals, the Durbin Watson[1] Statistic, is given. The sample consists of yearly observations for the period 1951-1962. The method used for estimation was ordinary least squares.[2]

C. The Stochastic Equations

(1) $S_g = \underset{(432)}{294} + \underset{(.159)}{.165}\, R_g + \underset{(.374)}{.632}\, F \qquad R^{-2} = .864;\ \delta = 1.88$

(2) $S_p = \underset{(1208)}{367} + \underset{(.0685)}{.0986}\, Y - \underset{(3.017)}{3.349}\, M_c + \underset{(3.204)}{5.249}\, M_m$

$R^{-2} = .888;\ \delta = .958$

(3) $X_{nm} = \underset{(381)}{-98} + \underset{(52)}{531}\, t \qquad R^{-2} = .905;\ \delta = 1.007$

(4) $X_m = \underset{(74)}{105} - \underset{(29)}{212}\, t + \underset{(.065)}{.838} \left(I_{m,t-1} + I_{m,t-2}\right)$

$R^{-2} = .983;\ \delta = 1.711$

(5) $X_s = \underset{(84)}{-207.6} + \underset{(11.4)}{91.7}\, t \qquad R^{-2} = .852;\ \delta = 1.065$

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[1] For equations with a single independent variable a value of d below .81 indicates with our sample size significant positive autocorrelation at the 1% level of significance; a value of d above 1.07 indicates serial independence, while of d between .81 and 1.07 yields inconclusive results. For equations with two independent variables, the corresponding limits for d are .70 and 1.25 respectively. For equations with three independent variables the relevant limits for d are .59 and 1.46, and for equations with four independent variables they are .49 and 1.70. Except for equations (11), (12) and (18) the results of the serial correlation test are either inconclusive or indicative of serial independence. Several recent papers criticize this measure of serial correlation, however.

[2] In the paper "Foreign Aid and Economic Development: The Case of Greece," op. cit., there was remarkably little difference between single stage least squares, limited information, and two stage least squares estimates of the equations which contain more than one endogenous variable.

(6) $M_c = \underset{(94.4)}{26.8} + \underset{(.0025)}{.02444}\,(C+G)$ $\qquad R^{-2} = .892;\ \delta = 1.806$

(7) $M_i = \underset{(310)}{-\,662} + \underset{(.0326)}{.0479}\,(C+G) + \underset{(.119)}{.502}\,I$ $\qquad R^{-2} = .986;\ \delta = 3.12$

(8) $M_m = \underset{(85)}{-\,416} + \underset{(.0059)}{.0088}\,(C+G) + \underset{(.0262)}{.200}\,I - \underset{(.097)}{.385}\left(I_{m,t-1} + I_{m,t-2}\right)$

$R^{-2} = .988;\ \delta = 2.52$

(9) $M_s = \underset{(118)}{-\,117} + \underset{(16.1)}{122.4}\,t$ $\qquad R^{-2} = .838;\ \delta = 1.087$

(10) $I_p = \underset{(.017)}{.082}\,V_p - \underset{(.0536)}{.0415}\,K_{p-1} + \underset{(.026)}{.123}\,X$ $\qquad R^{-2} = .990;\ \delta = 1.98$

(11) $I_s = \underset{(.048)}{.111}\,V_s - \underset{(.242)}{.308}\,K_{s-1}$ $\qquad R^{-2} \qquad \delta = .535$

(12) $I_c = \underset{(.393)}{.586}\,V_c - \underset{(.345)}{.1096}\,K_{c-2}$ $\qquad R^{-2} \qquad \delta = .403$

(13) $I_o = \underset{(.255)}{.308}\,V_o - \underset{(.779)}{.262}\,K_{o-1} + \underset{(.779)}{.756}\,M_{m-1}$

$R^{-2} = .973;\ \delta = 1.026$

(14) $I_m = \underset{(.102)}{.295}\,V_m - \underset{(.205)}{.135}\,K_{m-2} + \underset{(.054)}{.173}\,M_{m-1} + \underset{(.062)}{.147}\left(M_i - M_i^*\right)_{-1}$

$R^{-2} = .661 \qquad \delta = 1.94$

(15) $I_i = \underset{(.0047)}{.021}\,V + \underset{(.108)}{.632}\,I_{i-1}$ $\qquad R^{-2} = .796 \qquad \delta = 2.442$

(16) $R_g = \underset{(176)}{-\,33} + \underset{(.149)}{.85}\,T + \underset{(.028)}{.053}$ $\qquad R^{-2} = .995;\ \delta = 1.903$

(17) $T_d = \underset{(63)}{275} + \underset{(.0017)}{.034}\,V$ $\qquad R^{-2} = .973;\ \delta = 2.313$

(18) $T_i = \underset{(324)}{125.5} + \underset{(.0087)}{.151}\,V$ $\qquad R^{-2} = .964;\ \delta = .676$

D. The A Priori Equations

(19) $D_p = .1\ K_{p-1}$

(20) $D_m = .1\ K_{m-1}$

(21) $D_c = .05\ K_{c-1}$

(22) $D_s = .05\ K_{s-1}$

(23) $D_o = .1\ K_{o-1}$

(24) $M_i^* = .140\ V$

E. The Policy Equations

(25) $V_p = v_1\ V$

(26) $V_m = v_2\ V$

(27) $V_c = v_3\ V$

(28) $V_s = v_4\ V$

(29) $V_o = v_5\ V$

F. The Identities

(30) $V = V_p + V_m + V_c + V_s + V_o$

(31) $S = S_g + S_p$

(32) $X = X_{nm} + X_m + X_s$

(33) $M = M_c + M_m + M_i + M_s$

(34) $I = I_p + I_c + I_s + I_m + I_o + I_i$

(35) $S = I - F$

(36) $X = M - F$

(37) $V = C+G + I + X - M - T_i$

(38) $Y = V - T_d - D$

(39) $D = D_p + D_m + D_c + D_s + D_o$

(40) $K_p = K_{p-1} + I_p - D_p$

(41) $K_m = K_{m-1} + I_m - D_m$

(42) $K_c + K_{c-1} + K_c - D_c$

(43) $K_s = K_{s-1} + I_s - D_s$

(44) $K_o = K_{o-1} + I_o - D_o$

(45) $T = T_i + T_d$

V. THE PROPERTIES OF THE MODEL

One test of the descriptive validity of the model is to compare the predicted values of the endogenous variables with the values actually observed during the sample period. For this purpose, the representation of the Taiwan economy given by equations (1) - (45) was solved simultaneously using only the values of the predetermined variables in 1953 as initial conditions. The year 1953 was chosen as a starting date for the computations, since this date represents the time of a marked change in the structure of the economy--the end of the reconstruction period.

The simultaneous solution of the model generates both significantly lower foreign capital requirements and lower rates of growth than those experienced in practice. This is not surprising since the model is normalized to reproduce the average economic conditions and responses during the period 1951-62. It therefore tends to understate the economy's economic performance during phases of abnormally rapid growth and to overstate its progress at other times.

Since the model does not give quantitatively correct estimates during periods whose growth rates are not close to their average value, the simultaneous solution of the model should not be applied directly to select policies for future adjustments. The model can be used, however, with the aid of an artificial construction to investigate the effects of varying growth rates and other adjustment policies upon future foreign aid requirements for Taiwan. The specification of a growth rate r by an additional equation

$$(46) \qquad V_t = V_o\,(1+r)^t,$$

coupled with the other equations of the model, produces an overdetermined system. There are now to relevant foreign capital inflow requirements which can be calculated:

(1) the net foreign capital inflows determined by the balance of payments equilibrium condition, and

(2) the net foreign capital inflow requirements set by the savings-investment identity.

The "actual" foreign capital inflows needed to maintain the desired rate of growth is then taken to be the larger of the two gaps.

The procedure adopted here to study ways in which adjustments in the smaller gap can be effectively planned is rather straightforward. It is assumed that the gap which is calculated to have been dominant in the previous period will dominate in the present period, and policy measures are taken during the present period to reduce the final discrepancy between the two gaps at the end of the present period (as calculated at the beginning of the period). Thus, when the savings investment gap is the binding one, a reduction in consumer goods imports and/or an increase in capital goods imports can be used to stimulate savings. The policy equations specify that

$$(47) \qquad M_c = M_c' - m_1 (F - M - X)_{-1}$$

Where M_c' is the value of consumer goods imports calculated from equation (6), m_1 is an adjustment parameter, and $(F - M - X)_{-1}$ is the difference between the savings-investment gap and the import-export gap calculated for the previous period.

The analogous equation for the import of machinery is

$$(48) \qquad M_m = M_m' + m_2 (F - M - X)_{-1}$$

On the other hand, if the import-export gap is binding, investment in import-substitute and export-expanding manufacturing is increased by using

$$(49) \qquad I_m = I_m' + i (F - I - S)_{-1},$$

where the symbols are defined appropriately.

While some preliminary calculations of this nature have been carried out, time limitations have precluded an adequate investigation of the relative effectiveness of various policy parameters. A more complete discussion of the model along these lines will therefore be postponed until a later date.

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APPENDIX

DATA USED IN CALCULATIONS

TABLE I

TAIWAN: Composition of Gross Domestic Product at Current Factor Cost
(million N.T. dollars)

	Total Gross Domestic Product 1	Primary Industries 1	Manufacturing 1	Construction Utilities Transportation 1	Trade & Banking 1	Other 1
1951	9,664	3,341	1,791	1,186	1,323	2,023
1952	13,881	5,167	2,106	1,598	2,408	2,602
1953	18,791	7,699	2,754	1,833	3,585	2,920
1954	19,970	6,941	3,416	2,302	3,534	3,727
1955	23,966	8,424	4,211	2,716	4,043	4,572
1956	27,313	9,708	5,084	3,142	4,881	4,993
1957	32,414	10,938	6,314	3,943	5,565	5,654
1958	35,463	11,877	6,510	4,370	6,119	6,587
1959	41,667	13,431	8,231	4,911	7,390	7,704
1960	52,052	18,513	9,522	6,210	8,622	9,135
1961	58,223	19,336	10,943	7,587	9,383	10,974
1962	63,129	19,769	12,395	7,928	10,324	12,713

Source:

1. United Nations, Yearbook of National Accounts Statistics, 1958-63

our categories	UN categories
primary industries	= agriculture, forestry, hunting, fishing; mining and quarrying
manufacturing	= manufacturing
construction, utilities, transportation	= construction; gas, electricity, water; transportation, storage, communication
trade & banking	= wholesale and retail trade; banking, insurance, real estate
others	= ownership of dwellings, public administration and defense, services

TABLE II

TAIWAN: Composition of Fixed Capital Formation by Industrial Use at Current Market Prices (million N.T. dollars)[a]

	Primary Industries 1	Manufacturing 1	Construction Utilities Transportation 1	Trade & Banking 1	Other 1	Increase in Stocks 1
1951	453	247	283	130	190	1,089[b]
1952	587	341	535	215	341	863
1953	702	543	548	308	439	979
1954	722	493	661	317	544	1,186
1955	875	839	873	326	574	777
1956	913	974	1,081	253	781	851
1957	1,021	1,300	1,441	122	1,160	1,209
1958	1,207	1,720	1,941	115	1,398	1,193
1959	1,933	1,877	2,702	219	1,742	1,240
1960	2,115	2,428	3,216	445	2,394	2,391
1961	2,432	2,670	3,735	498	2,413	2,860
1962	2,345	2,966	3,676	639	2,319	3,304

Sources:

1. United Nations, Yearbook of National Accounts Statistics, 1958-63.

a. See Table I for explanation of headings.

b. Excludes adjustment for stock valuation.

TABLE III

TAIWAN: Capital Formation, Savings, at Current Market Prices
(million N.T. dollars)

	Gross Domestic Capital Formation 1	Depreciation 1	Net Domestic Capital Formation 2	Gross Saving 1	Government Saving 1, 3	Private Saving 1, 4
1951	2,397[a]	716	1,681[a]	1,837[a]	358[b]	1,497[b]
1952	2,887	830	2,057	2,100	695	1,405
1953	3,519	906	2,613	3,638	2,037	1,601
1954	3,923	1,159	2,764	3,341	2,301	1,040
1955	4,264	1,401	2,863	4,639	2,592	2,047
1956	4,853	1,767	3,091	4,140	2,325	1,815
1957	6,253	2,369	3,884	5,314	3,505	1,809
1958	7,574	2,613	4,961	7,007	3,960	3,047
1959	9,718	3,132	6,586	8,268	4,192	4,075
1960	12,989	4,039	8,950	11,583	5,648	5,935
1961	14,608	4,616	9,992	13,338	5,765	7,573
1962	15,249	4,640	10,633	12,953	4,100	8,853

Source:
1. United Nations, Yearbook of National Accounts Statistics, 1958-63.
2. Gross domestic capital formation less depreciation.
3. Saving by government and public enterprises.
4. Saving by households, non-profit institutions and private business enterprises.

a. excludes adjustment for stock valuation.
b. components do not add up to total due to rounding errors.

TABLE IV

TAIWAN: Composition of Capital Stock
(millions of N.T. dollars)

	Primary Industries 1	Manufacturing 1	Construction Utilities Transportation 1	Trade & Banking 1	Other 1
1950	1,952[a]	1,665[a]	2,182[a]	317[a]	1,618[a]
1951	2,127	1,813	2,352	395	1,732
1952	2,479	2,018	2,673	524	1,937
1953	2,900	2,344	3,002	709	2,200
1954	3,333	2,640	3,399	899	2,526
1955	3,858	3,144	3,923	1,095	2,870
1956	4,409	3,728	4,572	1,247	3,339
1957	5,022	4,508	5,437	1,320	4,035
1958	5,746	5,540	6,602	1,389	4,874
1959	6,909	6,666	8,223	1,520	5,919
1960	8,178	8,123	10,153	1,787	7,355
1961	9,637	9,725	12,394	2,086	8,803
1962	11,044	11,525	14,600	2,469	10,194

1. Starting with 1950 the capital stock entries are the cumulated value of .6 x gross fixed investment in industry. It is assumed that .4 of gross investment is devoted to replacement; this serves to check total depreciation as listed in the UN Yearbook of National Accounts Statistics.

a. Estimated by applying average marginal capital/output ratio in sector during 1951-1962 to 1951 output.

TABLE V.

TAIWAN: Foreign Capital Inflows, Imports, Exports
(millions of current N.T. dollars)

	Net Foreign Capital Inflows	Consumer Imports	Machinery Imports	Intermediate Imports	Services Imports	Maintenance Imports (M_i^*)	Non-Manufacturing Exports	Manufacturing Exports	Services Exports
	3	1, 5	1, 6	1, 7	2	4	1, 8	1, 9	2
1951	519	274.2	91.4	852.9	125	1,353	1,074.4	9.5	83
1952	770	363.9	121.2	1,439.2	151	1,943	1,465.0	2.9	56
1953	1,246	549.1	183.0	2,173.2	328	2,631	1,970.8	13.5	79
1954	2,103	646.4	215.8	2,441.5	479	2,796	1,434.9	15.9	68
1955	1,110	541.5	299.8	2,304.7	319	3,355	1,892.4	24.5	96
1956	1,662	787.3	368.2	3,644.3	392	3,894	2,906.6	24.8	150
1957	2,260	716.2	450.5	4,092.7	370	4,538	2,633.2	41.3	409
1958	3,051	770.8	462.9	4,371.2	900	4,965	3,620.8	240.3	565
1959	4,429	978.2	808.8	6,632.8	1,261	5,833	5,027.5	680.7	472
1960	4,688	1,442.3	1,279.0	8,075.6	1,302	7,287	5,022.9	943.8	745
1961	4,802	1,668.8	1,333.0	9,892.5	1,190	8,151	6,289.9	1,522.3	1,015
1962	4,283	1,349.1	1,203.6	9,620.8	1,326	8,838	6,914.8	1,820.0	924

Source:
1. UN, Yearbook of International Trade Statistics, 1959-1962.
2. UN, Yearbook of National Accounts Statistics, 1958-1963.
3. Imports (goods and services) less exports (goods and services).
4. Estimated by multiplying the gross domestic product by the average 1951-62 ratio of intermediate imports to GDP.
5. SITC 0, 1, 732.1, 8 and 9.
6. SITC 7 excluding 732.1.
7. SITC 2-6.
8. SITC 0-4.
9. SITC 5-9.