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CHANGES IN RURAL PURCHASING POWER IN TAIWAN, 1952-72†

Most policy makers and researchers have shown little enthusiasm for increasing rural purchasing power in low income countries. In part this is due to the stereotype that is thought to apply to consumption-savings behavior of rural residents: propensities to consume additional income are assumed to be very high, and rural people are thought to spend most additional income on drink, ceremonies, and other unproductive activities. This stereotype has led many development planners to argue that rural purchasing power must be held down or even reduced so that more capital can be squeezed out of agriculture. Taiwan is one of the few market-oriented economies where these types of assumptions about rural consumption-savings behavior have not dominated policies. The growth in rural purchasing power in Taiwan during the past couple of decades has played an important, though largely overlooked role in overall development of the economy. We feel that the Taiwanese experience offers some valuable insights into how other low income countries might more effectively manage expansion in rural consumption as well as savings.

During the past two decades, Taiwan has experienced remarkable economic growth. This has included particularly impressive advances in rural areas. Since the early 1950s, crop production has more than doubled, livestock output has quadrupled, agricultural exports have increased fivefold, and real per capita incomes in rural areas have more than doubled (*37*). Even more remarkable has been the relatively equitable distribution of the fruits of this growth among a large part of the rural population (*3, 5, 33*).

Many aspects of rural development in Taiwan have been carefully analyzed and reported (*12, 14, 23, 36, 37*). Very little, however, has been said about changes in rural purchasing power, the determinants of these adjustments, and how these changes may have affected overall development of the economy. As will be noted later, recent research indicates that substantial changes have taken

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TABLE 1.—NET DOMESTIC PRODUCT FROM MANUFACTURING AND COMMERCE, TOTAL PURCHASES, AND CONSUMER GOODS PURCHASED BY AGRICULTURE FROM NONAGRICULTURAL SOURCES IN TAIWAN WITH PERCENTAGES, 1952–70

Year	(1) Net domestic product from manufacturing and commerce[a] (*Million 1970 NT$*)	(2) Total purchases by agriculture from nonagricultural sector[b]	(3) (2) ÷ (1) (*Percent*)	(4) Purchases of consumer goods by agricultural households from nonagricultural sector[c] (*Million 1970 NT$*)	(5) (4) ÷ (1) (*Percent*)	(6) (4) ÷ (2) (*Percent*)
1952	10,290	8,808	86	5,338	52	61
1955	14,067	11,457	81	6,563	47	57
1958	16,914	17,233	102	9,308	55	54
1961	20,643	17,780	86	10,283	50	58
1964	31,181	20,039	64	11,435	37	57
1967	42,892	25,201	59	13,803	32	55
1970	65,301	26,786	41	14,723	23	55

[a] Council for International Economic Cooperation and Development, Executive Yuan, *Taiwan Statistical Data Book 1973,* Taipei, Taiwan, 1973, p. 23. Adjusted to 1970 prices using: Directorate-General of Budgets, Accounts and Statistics, Executive Yuan, *Commodity-Price Statistics Monthly Taiwan District, The Republic of China* (Taipei, Taiwan: March 1971), General Index of Wholesale Prices, 1952 = 100 and 1970 = 238. These figures exclude net domestic product from activities such as agriculture, mining, electrical power generation, construction, transportation and communications, and other activities such as service.

[b] Wuu-Long Lin, "Economic Interactions in Taiwan: A Study of Sectoral Flows and Linkages" (unpublished Ph.D. dissertation, Food Research Institute, Stanford University, 1973), pp. 34–37. Adjusted to 1970 prices using Provincial Government of Taiwan, Bureau of Accounting and Statistics, *Monthly Statistics on Price Received and Paid by Farmers in Taiwan,* Nantou, Taiwan, December 1966 and December 1970.

[c] In 1970, 1 US$ = 41 NT$.

place in rural incomes and associated consumption patterns. An attempt is made in the following discussion to provide an overview of these changes. This includes a brief review of the relative magnitude of agricultural purchases from the nonagricultural sector over the past two decades, and a discussion of changes in farm household income and consumption from 1960 through 1972. The presentation concludes by drawing lessons from the Taiwan experience with rural purchasing power which may be of interest to policy makers in other low income countries.

MAGNITUDE OF RURAL PURCHASING POWER IN TAIWAN

In the early 1950s a majority of Taiwan's population and a substantial part of its economic activities were in rural areas; purchases of productive and consumptive goods by rural households made up a substantial portion of total market transactions. Some notion of the importance of the purchases by agriculture from nonagricultural segments of the economy can be drawn from Table 1. As can be noted, total agricultural purchases from the nonagricultural sector in 1952 amounted to 8.8 billion 1970 New Taiwanese dollars (U.S. $215 million). Of this, 5.3 billion, or 61 percent, was made up by purchases for rural household consumption. For comparative purposes, in the same year net domestic product from manufacturing and commerce in Taiwan amounted to 10.3 billion New Taiwanese dollars (U.S. $251 million). Thus, 86 percent of the manufacturing and commerce output in that year was matched by total rural purchases from the nonagricultural sector, and rural household purchases of consumer goods matched 52 percent of the output of manufacturing and commerce.[1]

Throughout the 1950s, total rural purchases from the nonagricultural sector ranged from 80 to 100 percent of the output from manufacturing and commerce (Table 1). At the same time, most household purchases varied only slightly from 50 percent. Both percentages dropped from 1961 onward, as urban and export demands sharply expanded. It is somewhat surprising that the proportion of total agricultural purchases from the nonagricultural sector used for household consumption changed very little from 1952 to 1972. Throughout the period consumptive purchases made up more than half of the total. B. F. Johnston and Peter Kilby have asserted that when income and productive assets are relatively equally distributed, household consumption makes up a large part of rural demand for nonagricultural goods in early and intermediate stages of development (*17*).[2] Other authors have also concluded that this broadly based groundswell of consumer purchasing power in rural areas can have very strong linkages with industrial development (*7*, *22*, *27*).[3]

CHANGES IN RURAL HOUSEHOLD CONSUMPTION, 1960–72

Rural household purchases from the nonagricultural sector increased more than 175 percent over the 1952 to 1970 period, from 5.3 billion (U.S. $130 mil-

[1] Not all of these purchases, of course, were made from the manufacturing and commerce sectors. This particular comparison is made to show orders of magnitude.

[2] Mellor and Uma J. Lele present a similar argument for India (*29*).

[3] Other authors like A. O. Hirschman have argued that agriculture in low income countries has only weak linkages with other sectors (*11*, p. 109).

TABLE 2.—AVERAGE HOUSEHOLD SIZE, VALUE OF HOUSEHOLD CONSUMPTION AND INCOME OF FARM RECORD-KEEPING FAMILIES IN TAIWAN, 1960–72*

Year	Number of households	Average household size	Net household income (*1970 NT$*)[a]	Percent farm income	Total value of household consumption (*1970 NT$*)[a]	Percent of total consumption purchased	Percent of consumption which was food	Percent of food consumption purchased	Average propensity to consume[b]
1960	95	9.65	41,763	87	33,762	58	60	39	.81
1961	207	9.05	45,449	86	38,367	58	56	37	.85
1962	223	8.90	48,062	85	38,405	60	55	38	.80
1963	277	8.84	48,330	86	37,134	64	65	43	.77
1964	535	8.21	44,698	82	35,579	68	52	47	.80
1965	501	8.23	48,334	81	37,905	69	50	47	.78
1966	430	8.48	54,737	82	39,574	70	51	50	.72
1967	402	8.29	54,500	81	40,673	71	49	50	.75
1968	416	8.59	57,896	80	41,466	72	49	50	.72
1969	411	8.21	50,155	71	44,385	74	46	51	.88
1970	404	8.11	52,500	72	42,133	73	47	50	.80
1971	387	8.19	58,451	70	46,859	66	45	52	.80
1972	452	8.10	70,780	61	54,607	74	42	58	.77

* Calculated from Department of Agriculture and Forestry, Provincial Department of Taiwan (PDAF), *Report of Farm Record-keeping Families in Taiwan*, yearly reports from 1960 to 1972, Nantou, Taiwan.

[a] Current values were adjusted to 1970 prices using the General-Index-of-Prices-Received-By-Farmer published in *Monthly Statistics on Price Received & Prices Paid by Farmers in Taiwan*, Bureau of Accounting and Statistics, Provincial Government of Taiwan, Nantou, Taiwan, issues from December 1960 through December 1972 (1960 = 81.0, 1966 = 89.0, and 1972 = 108.6). In 1970, 1 US$ = 41 NT$.

[b] Equals total value of household consumption divided by net household income.

lion) to 14.7 billion (U.S. $359 million) 1970 New Taiwanese dollars (NT$). The "volume effects" of increase in household consumption were substantial. In large part these additional consumer purchases were due to increased purchasing power in rural areas resulting from expanding incomes. At least one-third of the increase can be accounted for by the 50 percent increase in rural population over the 1950 to 1970 period (*37*, p. 420).

Some insights into the changing makeup of rural consumption can be drawn from household data collected by a farm record-keeping project in Taiwan.[4] Information from this project covering the period 1960 through 1972 is shown in Table 2. The average value of household consumption, including purchased as well as home-produced goods, among the record-keeping families increased from almost 34,000 NT$ in 1960 to over 54,000 NT$ in 1972.[5] This 62 percent jump in household consumption was accompanied by a gradual increase in proportion of total consumption which was bought. In 1960 the average household purchased 58 percent of the total value of its consumption. By 1972, this had increased to 74 percent. The average household's total purchases for consumption more than doubled in value over this 13 year period. Per capita consumption went up at an even faster rate since average household size decreased from 9.65 in 1960 to 8.10 in 1972.

The percent of total consumption made up by food decreased throughout the 13 years among the record-keeping households (Table 2). This was accompanied by a steady increase, however, in the percent of total food consumption which was purchased: 39 percent in 1960 to 58 percent in 1972. In absolute terms the value of rice and wheat flour (staple foods) consumed by the average family decreased by more than a quarter over the 1960 through 1972 period (Table 3). A very large part of the rice consumed was produced by the household. At the same time the households rapidly increased their consumption of non-staple foods. As can be noted in Table 3, average household consumption of these non-staple foods increased by about two-thirds over the 13 years under analysis. A very large part of this was purchased.

The households also made major changes in some non-food consumption categories (Table 3). The consumption of beverages and tobacco, and utilities only increased by about one-third, while expenditures on household operations, human investment, and the "other" categories increased much more rapidly.

DETERMINANTS OF RURAL CONSUMPTION

Level of income as well as its distribution among households are, of course, the major determinants of the amount and composition of household consumption. Income sources and the stability of income flows might also influence consumption patterns in some cases. Some authors have also argued that family characteristics and asset holdings might influence household behavior. Two additional factors could also affect consumption behavior: returns to household in-

[4] This record-keeping project is supervised by the Provincial Department of Agriculture and Forestry. Farmers participate on a voluntary basis, and tend to be more progressive, and have larger farms and incomes than do average Taiwanese farmers.

[5] Total household consumption includes all expenditures not directly related to production activities during the year. It also includes an imputed value for in-kind consumption and purchases of consumer durables.

TABLE 3.—AVERAGE VALUE OF HOUSEHOLD CONSUMPTION BY EIGHT MAJOR CONSUMPTION CATEGORIES FOR FARM RECORD-KEEPING FAMILIES IN TAIWAN, 1960–72*
(1970 NT$)[a]

Year	Consumption categories[b]							
	Staple food (rice and flour)	Non-staple food	Beverages and tobacco	Clothing	Household operations	Utilities	Human investment	Other
1960–72	−27	66	33	67	1,599	1,875	2,621	4,365
1961	12,503	9,158	1,594	1,583	2,086	2,316	3,279	4,698
1962	11,828	9,184	1,686	1,709	2,414	2,400	3,605	5,579
1963	14,884	9,264	1,753	1,768	2,278	2,010	3,936	5,972
1964	9,553	8,846	1,612	1,901	2,712	1,634	3,533	4,514
1965	10,030	9,102	1,621	1,807	2,851	1,970	3,623	6,091
1966	9,902	10,178	1,740	1,836	3,209	2,565	4,310	5,845
1967	9,693	10,206	1,740	2,001	2,919	2,225	4,800	7,170
1968	9,702	10,766	1,824	1,997	3,124	2,102	4,903	7,049
1969	9,382	11,021	2,014	2,084	3,658	2,335	5,141	8,751
1970	9,034	10,885	1,606	1,896	3,902	2,238	4,783	7,789
1971	9,230	11,679	1,766	1,967	3,610	2,454	5,960	10,192
1972	8,570	14,331	2,058	2,372	4,471	2,534	8,172	12,099
Percentage change 1960–72	−27	66	33	67	180	35	212	177

* Calculated from Department of Agriculture and Forestry, Provincial Department of Taiwan (PDAF), *Report of Farm Record-keeping Families in Taiwan*, yearly reports from 1960 to 1972, Nantou, Taiwan.

[a] In 1970, 1 US$ = 41 NT$.

[b] See appendix for definitions of each consumption category.

TABLE 4.—TIME SERIES INCOME ELASTICITIES OF DEMAND FOR ELEVEN CONSUMPTION CATEGORIES AMONG FARM RECORD-KEEPING FAMILIES IN TAIWAN, 1960 THROUGH 1972*

Consumption category[a]	Income elasticity[b]	Standard error	R^2	Durbin-Watson
Total consumption	.88	.091	.90	.80
In-kind consumption	−.49	.125	.59	1.16
Total food consumption	.22	.083	.41	1.21
Staple food consumption	−.56	.153	.57	1.29
Non-staple food	1.01	.088	.93	.96
Beverages and tobacco	.59	.089	.81	1.59
Clothing	.90	.122	.84	1.11
Household operations	1.82	.257	.83	1.31
Utilities	.62	.160	.60	1.55
Human investment	1.87	.132	.95	.83
Other consumption	1.99	.223	.89	.68

* Calculated from Department of Agriculture and Forestry, Provincial Department of Taiwan (PDAF), *Report of Farm Record-keeping Families in Taiwan*, yearly reports 1960 to 1972, Nantou, Taiwan.

[a] Two-year moving average per capita consumption and income figures derived from Tables 2 and 3, were used to make the calculations.

[b] Estimated by a double long function and single stage least squares estimating techniques.

vestments, and changes in consumption alternatives. Each of these will be examined in turn. Following this, an attempt is made to suggest how these determinants may have affected rural consumption over the past couple of decades.

Income Level

Comprehensive land reform programs carried out in the early 1950s plus other supporting policies resulted in relatively equitable distribution of assets and incomes in rural areas of Taiwan. This combined with rapid growth in rural incomes during the 1950s and 1960s created a broadly based groundswell of rural purchasing power. Some notion of the magnitude of these income changes can be seen in Table 2. In real terms, over the period 1960 through 1972, the average income of record-keeping households increased by about 70 percent.[6] A substantial part of this increase came from off-farm sources. In 1960 the average record-keeping household derived 87 percent of its total income from on-farm activities. By 1972 the average household derived less than two-thirds of its total income from on-farm activities.

The close relationship between increases in income and changes in rural consumption patterns is shown in Table 4. The time series income elasticities shown in the Table were estimated from two year moving-average per capita consumption and income data shown in Table 3.[7] A double log function of the

[6] Average per capita income among these households in 1960 was equal to about U.S. $103. This increased to U.S. $218 by 1972.

[7] Partly because of limited household income data many micro consumption studies have estimated expenditure elasticities rather than income elasticities (*13*, *19*, *34*). This choice has also been partly based on the permanent income hypothesis. That is, total consumption is thought to be more closely related to permanent income, for which total expenditures are a proxy, than income itself which may include a large transitory component (*9*). The use of total expenditures rather than income has several drawbacks, however. The assumption of independent error terms is usually vio-

following form was applied to the data:

$$\text{Log } Y/N = \alpha + \beta \text{ Log } C/N + \varepsilon,$$

where Y/N is the average net per capital income in a given period, β is the constant income elasticity, C/N is the average per capita consumption of a given class of goods in the same period, and ε is the error term.[8] Single-stage least square techniques were used in estimating the equations.[9]

Several interesting points stand out in Table 4. The first is the very low income elasticity of demand for total food consumption (.22). Other studies have suggested that income elasticities for food at per capita income levels similar to those in rural Taiwan during the 1960s, roughly U.S. $150, generally ranged from .4 to .6 (*13, 18, 42, 48*). Sharply different income elasticities result, however, when food consumption is divided into staple foods and non-staple foods. Because of the absolute decline in value of rice and wheat products consumed by the average household, the income elasticity for staple foods, a large part of which was home produced, was negative (−.56). At the same time, the elasticity for non-staple foods was close to unity (1.01). Consumption of these non-staple foods along with clothing (.90) expanded almost hand-in-hand with income.

As might be expected, income elasticities are very high for household operations including consumer durables (1.82), human investment (1.87), and "other" consumption (1.99). Most of the goods and services included in these high elasticity consumption categories were provided by the nonagricultural sector. These high elasticities combined with steady increases in rural household incomes have resulted in major changes in the composition of the bundle of goods and services consumed by rural households over the past couple of decades. These high elasticities combined with rural income growth and the relatively large size of the rural household sector, resulted in very strong and dynamic final demand linkages between household consumption and nonagricultural growth in general.

Income Sources

A priori one might argue that with economic growth, rural households would be able to diversify their sources of income beyond production activities on their own farms.[10] This diversification exposes the household to a broader range of consumption activities as well as life styles and tastes. The emulation of these life styles might cause rural households to alter their consumption patterns. A

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lated, for example, when total expenditures are on the right hand side of the equation and a subcategory of expenditure is on the left hand side. Furthermore, in time series analysis one must assume that the average propensity to save is a constant proportion of income over time. This appears not to have been the case in Taiwan during the 1960s (*32*). It is mainly for this latter reason that income rather than expenditure elasticities are calculated in this analysis.

[8] Linear and semi-log functions were also fitted to the data. In general, the double log functions gave similar or better results than did these alternative functional forms.

[9] A number of critical assumptions are made in estimating income elasticities from time series data. The most important of these are (1) that relative prices do not change; (2) that the composition and tastes of households are fixed; (3) that the pattern of income distribution is unaltered; (4) that the quality of consumptive goods does not change; and (5) that a constant basket of consumptive goods face the household over time. As will be noted later in the discussion, several of these assumptions are quite shaky in the Taiwan case.

[10] Several studies in Japan have focused on this issue (e.g., *40*).

clear-cut test of this argument is difficult because diversification almost always leads to higher incomes. The emulation effect, therefore, may be masked by the income change.

As noted earlier, farmers in Taiwan, especially over the period from 1960 to 1972, significantly diversified their income sources. The percent of households participating in the farm record-keeping project realizing more than 70 percent of their income from farm operations decreased from 85 percent in 1960 to 59 percent by 1970 (*32*, p. 69).

Analysis of the farm record-keeping data failed to reveal any significant differences in the make up of household consumption due to differences in income sources (*6*, pp. 67–68). That is, households that realized a large part of their income from off-farm activities behaved in a manner similar to those whose main income source was agriculture. Similarly, there appeared to be no relationship between the proportion of home-produced food consumed by the household and total food consumed.

M. L. Ong and associates, however, found that both average and marginal propensities for total household consumption were negatively associated with the ratio of farm income to total household income (*32*, pp. 80–82). Farm record-keeping households realizing more than 70 percent of total income from their own farming operations almost always had lower average and marginal propensities to consume. It will be argued later that these differences in consumption-savings behavior may be due to higher rates of return faced by households that are closer to being full time farming operations.

Income Instability

An additional explanation for a relationship between income source and consumption activities may be the differences in the stability of income flows to the household from various sources. It may be that income sources *per se* do not affect household consumption, except as they vary in reliability. A highly unstable income flow from one source may be viewed by the household as largely transitory income. More stable income from another source, at the same time, may be treated as permanent income.

Some indication of rural household income instability in Taiwan is shown in Table 5. Data in this table come from a panel of 53 households that participated in the farm record-keeping project each year from 1964 through 1970. As shown in Table 2, it was during this period that off-farm sources of income rapidly became important in many farm record-keeping households. This was also true among the 53 panel households. Over the period from 1964 through 1970 average household income among panel households increased 28 percent, from $42,396 NT to $54,128 NT in 1970 prices (*2*, p. 69). Average household income from farming, however, only increased 9 percent, from $34,466 NT to $37,550 NT. As a result, income from farming as a percentage of total household income dropped from 81 percent in 1964 to 69 percent in 1970.

These panel households experienced, on the average, a good deal of income instability. The instability index shown in Table 5 measures the average deviation in change of annual household income around the mean rate of growth of income

TABLE 5.—INCOME INSTABILITY RANKINGS FOR A PANEL OF 53 FARM HOUSEHOLDS IN TAIWAN BY INCOME SOURCE, 1964–70*

	Income instability index[a]			
	0–19.9	20–39.9	40–59.9	60+[b]
Total household income:				
Number of households	22	23	5	3
Average 1970 farm size (*hectares*)	1.40	1.31	1.56	1.93
Average 1970 household income (*NT$*)[c]	59,548	50,899	52,584	44,379
Farm income:				
Number of households	19	20	10	4
Average 1970 farm size (*hectares*)	1.54	1.23	1.06	1.85
Average 1970 farm income (*NT$*)[c]	46,543	34,325	32,168	24,409
Non-farm income:				
Number of households	4	13	6	30
Average 1970 farm size (*hectares*)	.38	1.26	.82	1.64
Average 1970 farm income (*NT$*)[c]	11,765	30,323	29,296	45,770

* Data from Truong Quang Canh, "Income Instability and Consumption Behavior: A Study of Taiwanese Farm Households, 1964–1970" (unpublished Ph.D. dissertation, Department of Agricultural Economics and Rural Sociology, The Ohio State University, 1974).

[a] Measures the average variation of yearly income growth around the mean income growth rate for each household over the 1964–70 period.

[b] Maximum index values for total income were 109.6, for farm income 310.4, and for non-farm income 2,297.1.

[c] In 1970, 1 US$ = 41 NT$.

for individual households over the 1964 through 1970 period.[11] Only 22 of the 53 households had income instability indexes of less than 20 on their total household income. The other 31 households experienced an average deviation in annual income around their income growth path of 20 percent or more of total income. Three of the households had instability indexes of 60 or more. The indexes on household *farm* income showed similar income instability. But, as is shown in the bottom portion of Table 5, non-farm incomes among the panel households were much more unstable. Forty-nine of the households had indexes larger than 20 on their non-farm income, and 30 had indexes of 60 plus.

[11] This instability index is similar to the one calculated by Lundberg (*30*, pp. 114–16). The index for an individual household was calculated as follows:

$$I_i = \frac{1}{T} \sum_t | Xit - \bar{x} | \text{, where}$$

$$Xit = \frac{Yit - (Yit - 1)}{Yit - 1} \times 100, \text{ and}$$

$$\bar{x} = \frac{1}{T} \sum_t Xit .$$

"*I*" is defined as the Index, *Yit* is household income in a given year "*t*," and *T* is the number of years less one over which the Index is calculated. The mean rate of growth of income over the period analyzed is $\bar{x}$ (*2*, p. 36).

This sharp difference in income stability between farm and non-farm sources of income surprised us. We had expected that farm incomes would have the most instability due to the vagaries of weather. It appears, however, that despite periodic damage from typhoons, households are able to smooth farm income streams through multiple cropping and enterprise diversification. The larger instability of non-farm income may be due in part to the fact that rural individuals are relatively new entrants into the non-farm job market. They may find themselves on the fringe of permanent employment. As time passes one might expect these non-farm income streams to become more stable.

Canh found in a multiple regression analysis no systematic relationship between the income instability index and consumption behavior of the panel households (*2*, pp. 66–90). This was true for total household consumption as well as for most of the various subcategories of consumption which he tested. A possible explanation for this is that, despite rather wide income swings, the rural households may be able to predict fairly well, on the basis of past experience, future income patterns, and thus view a large part of unstable future incomes as permanent income.

Family Characteristics and Assets

In a separate analysis of the 53 household panel data, Lien-In Amy Chin found a family-size elasticity of consumption to be fairly high but to decline over time (*6*, p. 65). From 1964 to 1967 a 10 percent increase in family size was associated with an increase in total consumption of about 4 percent. Possibly because of the family aging process, this relationship dropped to about 2 percent by 1970. As might be expected, she found a very close but again declining positive relationship between changes in family size and changes in staple food consumption (*6*, p. 62). In 1964 and 1965 family-size elasticities with respect to staple food consumption were near unity. By 1969–1970 these elasticities had dropped to about .7. Family-size elasticities were found to be much lower for non-staple food consumption, low and sometimes negative for human investment, and always negative on the "other" consumption category.

Ong found no systematic relationship between age composition of the family and total consumption among all record-keeping households over the 1960–70 period (*31*, pp. 80 and 82), using a dependency ratio which showed the proportion of the numbers of people younger than 15 years of age and over 60 who resided in the household.

Both Ong and Chin also looked at how household assets affected consumption. Ong found, as one might expect, that the households with the largest amounts of farmland generally had the lowest average and marginal propensities to consume (*31*, p. 80). She concluded, however, that this was due to the higher incomes associated with larger farms, rather than an asset effect *per se*. Chin also found very little association between the panel's household wealth, a bit broader notion than used by Ong, and total household consumption (*6*, p. 65).

Return to Investment

Another factor which may have influenced rural consumption patterns in Taiwan has not been extensively discussed or analyzed. This is the rates of

return that the households might realize from various types of investments. Casual observation suggests that some households sharply curtail consumption in order to educate children, invest in a house, or to purchase land. It is less obvious if household consumption competes for expenditures on a broader range of household investment alternatives. That is, would a high rate of return to capital investments on the farm, or to increased farm operating expenses, cause households to divert resources from consumption? Would high rates of return to off-farm investments, including financial assets, have the same effect?

Although far from conclusive, several pieces of recent work in Taiwan shed some light on this issue. Canh, for example, found a negative relationship between household consumption and the rate of return to farm assets among the 53 panel farms (*2*, pp. 74–75). Chyau Tuan in his analysis of saving activities in farmers' associations in Taiwan found evidence which suggests that rural household consumption also may have been retarded by attractive interest rates on financial deposits (*46*).

Changes in Consumption Alternatives

Social scientists have long recognized that rising expectations and changing consumption aspirations play an important role in determining consumption patterns in developing areas (*41*). In a dynamic economic environment rural households adjust upward their desired standard of living. This, in turn, provides incentive for the household to work harder to realize this new standard. Where these forces are strong, household income and household consumption become interdependent.

In this regard, one must be impressed with the substantial changes in consumption opportunities available to rural households in Taiwan over the past two decades. In the late 1950s there were very few bicycles, even fewer large household appliances, and relatively few radios in rural areas. By the early 1970s, however, consumer durables such as bicycles, radios, motor bikes, sewing machines, refrigerators, electric rice-cookers, and television sets were common in rural households. As D. S. Freedman has noted, most of these consumer durables began to flow into the rural areas of Taiwan during the early 1960s (*10*). The extension of an electricity network to most parts of rural Taiwan by the early 1960s greatly encouraged the acquisition of many of these items.[12]

A general idea of the changes in consumer durables in rural households over the 1966–73 period can be drawn from Table 6. Particularly impressive are sharp increases in numbers of television sets, refrigerators, electric rice-cookers, washing machines, gas stoves and motor bikes.

A substantial increase in expenditures by record-keeping households for consumer durables can be noted in Table 3. In large part, the dramatic increases in household operation expenses and in "other" expenses in Table 3 reflect acquisition of consumer durables. In 1960, the average household spent only 18 percent of household income on these two consumption categories, but by 1972 it spent 30 percent. The big increase in the human investment category is also largely a re-

[12] It is also possible that the relative, if not absolute, price of many of these consumer durables decreased during this period, further adding to their attractiveness. We were unable to assemble price information to verify this point, unfortunately.

TABLE 6.—ESTIMATED QUANTITY OF MODERN HOUSEHOLD EQUIPMENT AND APPLIANCES USED BY FARM HOUSEHOLDS IN TAIWAN, 1966–73*
(3,000 households surveyed)

	1966	1968	1970	1973
Television sets	4,899	22,703	85,738	331,033
Electric fans	340,231	393,682	576,080	722,529
Radios	372,549	415,875	456,205	278,908
Refrigerators	3,357	6,980	16,647	101,715
Electric cookers	48,219	130,984	271,392	416,553
Washing machines	—	—	3,201	12,025
Ice boxes	1,432	766	—	—
Sewing machines	427,699	454,328	528,669	497,265
Gas stoves	3,394	9,986	33,178	375,238
Motor bicycles	42,871	44,184	111,223	196,510
Bicycles	870,280	881,392	1,019,190	1,016,935

* Data from Taiwan Provincial Government, Bureau of Accounting and Statistics, *Report on the Survey of Family Income and Expenditure in Taiwan*, for years 1966, 1968, 1970, 1973, and various years 1966–74.

flection of increased availability of more and better education and health facilities in rural areas. In 1960 only 6 percent of household consumption went for these purposes, but by 1972 this had increased to 12 percent.

A HYPOTHETICAL RURAL CONSUMPTION PATH

Despite the relatively abundant data available in Taiwan, it is difficult to weigh and sequence all of the factors that have affected rural consumption. Some necessary data is missing, some factors have causal relations with consumption which run both ways, and the net effects of various factors are difficult to sort out when a number of factors are changing.[13] The foregoing discussion, however, has suggested that some factors do have important impacts on the amount as well as make up of rural consumption. It has been shown also that in early stages of economic development the rural consumption component of a society's economic activities can be relatively large and therefore important policy-wise.

To help guide additional research on this topic, it may be useful to lay out a hypothetical scenario of what may have happened to rural household consumption in Taiwan over the 1950 to 1972 period. For discussion purposes it also may be useful to organize into five subgroups the main factors which are associated with changes in rural consumption. To further simplify the discussion one might focus on how these factors relate to a single indicator of rural consumption behavior such as the household's average propensity to consume (APC).[14]

The five categories of factors suggested here are:

(1) Income characteristics. (This includes income growth, stability, distribution, and sources.)

[13] Freedman, for example, has argued that household members are willing to work harder to earn additional income when desirable consumer durables become available (*10*). In an interesting line of argument, Eva Mueller argues that the availability of consumer durables, educational facilities, and rapidly increasing incomes widely dispersed throughout the population in Taiwan have been very important factors in causing sharp declines in birth rates (*30*).

[14] Defined as the ratio of annual total household consumption to annual total household income.

(2) Profitability of on-farm investment alternatives. (This is strongly influenced by public investments, land tenure arrangements, pricing policy on inputs and products, availability of new technology, and credit policies.)

(3) Returns from off-farm investment alternatives. (This includes availability of, and returns to, investments in human capital, as well as regular business opportunities. It also includes returns to financial assets.)

(4) The make up of the bundle of consumptive goods available in rural areas. (The introduction of attractive new consumer durables to rural areas is particularly important in this regard.)

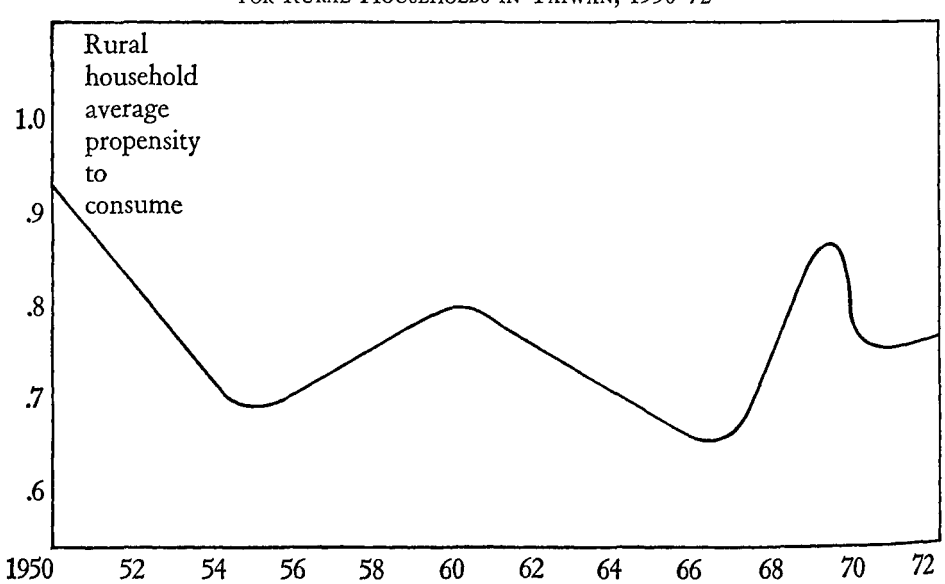
(5) Changes in the composition of the rural household. (Rapid off-farm migration and changes in birth and death rates can cause substantial changes in the age structure of rural households.)

If one had adequate data he might find that the APC for rural households in Taiwan had followed a path similar to that shown in Chart 1.

From 1950 through the mid-1950s, a large number of share tenants became owner operators. This change undoubtedly increased their internal rate of return, which in turn would have reduced the propensity to consume. Furthermore, improvements in irrigation systems, marketing infrastructures, and research facilities helped to further increase the profitability of on-farm investments. Steady increases in household incomes, resulting partly from the above-mentioned changes, also helped to depress the APC.

From the mid-1950s to the early 1960s it is probable that the APC gradually increased. A number of government programs during this period were aimed at extracting resources from the agricultural sector: land taxes, forced sales of rice at low prices, and fertilizer-rice barter exchange ratios unfavorable for farmers. As a result, returns from on-farm investment may have fallen and farm-income growth slowed.

CHART 1.—HYPOTHETICAL AVERAGE PROPENSITY TO CONSUME SCHEDULE FOR RURAL HOUSEHOLDS IN TAIWAN, 1950–72



In the early 1960s rapidly expanding off-farm employment speeded up the income growth of rural households. The resulting decline in the APC was tempered, however, by at least two factors. First, improved education and health opportunities in rural areas induced households to spend more on human capital. Second, the widespread availability of a large number of new consumer goods made current consumption more attractive. Both of these factors exerted some offsetting upward pressure on the APC.

The very sharp increase in the APC in 1969 was largely due to the serious typhoons which raked Taiwan and significantly reduced rural household incomes. Further decreases in the profitability of on-farm investments due to adverse governmental policies, a slowdown in technological change and public investments in rural areas may have also caused some upward pressure on APC's. The continued flow of new consumer goods into rural areas also played a role in the upturn of APC.

It is less clear how changes in the make up of rural households altered consumption patterns. Three important population dynamics have been involved in Taiwan. The first is the rural outmigration process which has steadily drained young people out of rural areas. The second is the rapid decline in birth rates that has shrunk the base of the age pyramid. The third is the increase in the life expectancy. All three of these factors contribute to an increase in the average age of rural household members. This household aging process probably influences the composition of household consumption as well as consumption-saving decisions.

IMPLICATIONS FOR OTHER LOW INCOME COUNTRIES

Data presented in the preceding discussion strongly suggest that rural purchasing power in Taiwan during the past two decades has provided a major market for goods produced in the nonagricultural sector. These final demand linkages were especially important in the 1950s when rural residents made up a large part of total population, and when nonagricultural exports were relatively small. The strength of these final demand linkages was largely due to the rapid growth in, as well as relatively equitable distribution of, rural incomes. In all too many low income countries stagnant agricultural sectors or government policies which heavily squeeze rural incomes leave too little purchasing power in rural areas to provide these strong final demand links. The underutilized "industrial islands" surrounded by seas of rural poverty in Northeast Brazil, Colombia, and Pakistan, for example, are vivid contrasts to the way development has evolved in Taiwan.

The Taiwanese experience further suggests that rural consumption patterns, and their mirror image savings patterns, may be much more dynamic than has been typically assumed in the past. Rural households appear to change their consumption selections rapidly as incomes increase and new consumer goods are introduced into the rural markets. It also appears that incentives to invest and save strongly influence rural household consumption decisions. As a result, policies which depress agricultural prices or raise agricultural costs have a double impact on rural consumption: (1) they reduce the income available for consumption, and (2) they weaken the incentives to postpone consumption in

order to make investments in additional productive capacity within the farms.

The Taiwanese experience also illustrates the importance of off-farm employment in helping to maintain a high level of rural purchasing power. Rapid expansion in off-farm employment during the 1960s allowed rural households to increase their total incomes and consumption despite the leveling off of farm incomes. A development strategy which promotes a number of small industries scattered throughout the country provided rural households with better access to additional employment opportunities. The message here is that planners must coordinate growth in off-farm employment opportunities with the extraction of large amounts of capital from agriculture if final demand linkages in rural areas are to remain strong.

The most remarkable feature of the Taiwan experience, in our opinion, has been the delicate balance which has been maintained in inter- as well as intra-sector development policies. On the one hand, as T. H. Lee has pointed out, these policies squeezed substantial amounts of capital out of the agricultural sector (*24*). Intersectoral balance was maintained, however, by large public investments in rural development. The net effect of these policies did not destroy the farm level incentives to invest in additional productive capacity.

Equally important, Taiwan realized balanced growth within the agricultural sector. Increases in income were equitably distributed geographically as well as among the various rural income groups. Land reform laid the foundation for this, but a number of other supporting policies were also important. Contrary to some thinking, this equitable distribution of assets and income did not result in an orgy of "wasteful consumption" and a decrease in overall savings in rural areas. Instead a broadly based wave of rural purchasing power emerged which strongly supported growth in the nonagricultural sector. Because a large part of this purchasing power was exercised by rural poor, the expenditure patterns were especially favorable for growth of small labor intensive industries. Furthermore, it is clear that a significant portion of the increased rural incomes was saved (*46*). Attractive interest rates mobilized substantial amounts of financial savings in farmers' associations as well as in other segments of the financial system. These savings and the associated credit activities provided the foundation on which the very effective farmers' associations were built.

In conclusion, we feel that policy makers ought to have a positive attitude toward increasing rural purchasing power in low income countries. This includes recognizing that rural consumption-savings behavior is quite dynamic and sensitive to policy manipulation. Balanced policies that stimulate and guide this growth in rural purchasing power are all too often missing in most low income countries.

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APPENDIX

DEFINITION OF VARIABLES USED IN THE ANALYSIS*

Household size	—is the total number of individuals who were members of the household during most of the calendar year.
Total household consumption	—includes all household expenditures not directly related to production activities during the year. It also includes an imputed value for in-kind consumption, and also purchases of consumer durables.
Household consumption in-kind	—is the total imputed value of all farm production directly consumed by the household. Prices received by farmers were used to calculate values.
Total food consumption	—includes all purchased as well as in-kind consumption of staple and non-staple foods.
Net household income	—is the sum of net farm income and net non-farm income realized by the household during the year. Farm income does not include an adjustment for capital depreciation, but does include an estimated value of in-kind household consumption.
Staple foods	—made up mainly by rice and flour. Much of this is typically in-kind.
Non-staple foods	—all other foods consumed by the household. A large part of this is typically purchased.
Beverages and tobacco	—includes minor expenditures on hobbies.
Clothing	—includes bedding.
Household operations	—made up by ornaments, decorations, rent and repair on dwellings, furniture, utensils, interest payment on household borrowings, and taxes and assessments on the household.
Utilities	—total value of fuel, electricity, and water used in the household.
Human investment	—expenses for education, cultural activities, health and sanitation.
Other expenses	—are the costs of social activities, amusement, marriages, funerals, festivals, postage, communications and travel, and other miscellaneous expenses.
Farm size	—is the total amount of land included in the farm enterprise. Most of this land would be owner-operated.

* See citations 2, 6, and *31* for additional details.