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The Political Economy of RICE IN ASIA: INDONESIA

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The Political Economy of Rice in Asia: Indonesia*

C. Peter Timmer+

I. INTRODUCTION

Indonesia needs no introduction to either commodity economists interested in the world rice market, nor to development economists interested in structural change and the role of agriculture in economic development. In the space of half a century, Indonesia has been transformed from a leading exporter of rice to the world's largest importer of both commercial and concessional rice. And through the writings of Boeke, Indonesia served as the model for the elucidation of dualism, a concept that totally permeates nearly all aspects of development economics. No apologies are needed for heading this sequence of articles on rice policy in Asia with the Indonesian essay.

The development of the discussion is straight forward. Following a review of the agronomic and economic setting of Indonesia rice culture is a discussion of the history of rice policy, a history dating to the 17th century. With the discussion of modern rice policy comes an attempt to make explicit the interaction of objectives, policies and constraints. The goal is to understand what drives the system, what the overriding objectives are, and which constraints most closely condition the policy choices. The essay closes with an evaluation of modern Indonesia rice policy and a prognosis that tentatively rejects the historical determinism that constantly lurks in the background of any discussion of Indonesia rice policy.

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I wish to thank Walter P. Falcon, William H. Janssen, and Leon A. Mears for substantive criticism of an early draft of this essay, but they are not responsible for, nor necessarily in agreement with, the views expressed herein. These views and any remaining errors in fact or interpretation are my responsibility. My wife has materially improved the style and readability of the entire manuscript.

+The author is co-principal investigator, with Walter P. Falcon, of the Stanford Project on the Political Economy of Rice in Asia.

II. THE TECHNICAL AND ECONOMIC SETTING

Economic Geography

A handful of mere statistics of the most routine, humdrum sort can sketch a picture of the basic characteristics of the Indonesian archipelago as a human habitat with more immediacy than pages of vivid prose about steaming vulcanoes, serpentine river basins, and still, dark jungles. The land area of the country amounts to about one and one-half million square kilometers, or about that of Alaska. Of this only about one hundred and thirty-two thousand square kilometers are in Java, the rest making up what are usually called 'the Outer Islands'--Sumatra, Borneo (Kalimantan), Celebes (Sulawesi), the Moluccas, and the Lesser Sundas (Nusa Tenggara). But the country's total population (1961) is around ninety-seven million, while Java's population alone is about sixty-three million. That is to say, about 9 percent of the land area supports nearly two-thirds of the population; or, reciprocally, more than 90 percent of the land area supports approximately one-third of the population. Put in density terms, Indonesia as a whole has about 60 persons per square kilometer; Java has 480, and the more crowded areas of the central and east central parts of the island more than a thousand. On the other hand, the whole of Indonesia minus Java (i.e., the Outer Islands) has a density of around twenty-four per square kilometer. To summarize: all over, 60; the Outer Islands, 24; Java, 480: if ever there was a tail which wagged a dog, Java is the tail, Indonesia the dog.[1]

Indonesia's agriculture is dominated by the country's equatorial location. The westward monsoon from December to January carries the rains for the large wet season rice crop on Java; the eastward monsoon from June to August is dry. Only irrigated land can be double- or triple-cropped with rice, although the dry season usually is wet enough to grow secondary crops such as soybeans, maize, cassava, or peanuts.

Production

Rice culture is millennia-old in Indonesia; there are wet paddy fields (sawah) that have undoubtedly been planted twice a year to rice for centuries without ever receiving artificial fertilizer. The enriching nature of volcanic ash (and the run-off from volcanic slopes) and the unique ecosystem of paddy-cultivated rice have permitted stable yields (although low by temperate Asian standards) without modern technology. Fertilizer use on

[1]Geertz (7, pp. 12-13). Naturally, the population density figures are even more striking with current population: Java has nearly 600 people per square kilometer while the Outer Islands have only 34. Including West Irian (excluded in Geertz's calculations) in the Outer Islands reduces the population density to 24. For further discussion of the ecological setting of Indonesian rice culture both on Java and the Outer Islands, the book by Geertz (7) is unsurpassed.

rice has historically been very low. Still, many Javanese farmers became familiar with artificial fertilizer when forced to grow sugar for the Dutch mills in the late nineteenth and early twentieth centuries. It was not until the late 1960s, however, under the influence of government programs to make fertilizer more readily available at profitable prices, that farmers began to use significant quantities of fertilizer on rice.[1]

The raw population densities for Indonesia have already given some hint of the major technical constraints on the typical rice cultivator: the extremely small size holdings. Although very wide variations in both land tenure and land quality make "average land ownership" a dubious concept at the micro level, the pressing fact is that over two-thirds of the farm population have well less than half a hectare to cultivate, and probably less than a third. Several recently published village surveys provide some depressing details.[2]

Miri, a hamlet in the kelurahan (sub-country) of Srihardjo, lies in the poverty-stricken region south of Yogyakarta. It has a population of 164 families with 964 people, nearly all of them farmers. The total arable land controlled by these families is 29.5 hectares, or less than 0.2 hectares per family. And even these postage stamp-sized holdings are not held evenly, as Table 1 shows.

In kabupaten (district) Klaten in Central Java, average land ownership has not deteriorated to quite the levels of Miri in Yogyakarta Special region. Table 2 summarizes some basic data for the three sample villages of Nganjat, Kahuman, and Pluneng in Klaten.

Although the average sawah holdings of those who own sawah are larger in Klaten than Srihardjo, the proportions with rice fields are much worse:

[1]Estimates of fertilizer use have been constructed by the National Fertilizer Study Team (18). Kolff (11) presents a discussion of fertilizer distribution.

[2]See Penny and Singarimbun (17) and Utami and Ihalauw (33) for case studies and Utrecht (34) for summary evidence and discussion of the 1960 land reform bill.

Table 1. -- Miri: Land Ownership of Sawah* (Hectares)

Area owned[a]	Number of Owners	Percent of all Owners	Percent of all Land Owned
None	60[b]	37	0
Under 0.2	77	47	33
0.201 to 0.8	24	14	40
0.801 and over	3	2	27
Total	164	100	100

*Village records, reported in Penny and Singarimbun (17).

[a]Includes land distributed to village officials in lieu of salary or pensions.

[b]Of these 60 families without sawah, 24 own some house compound or dry land, while 36 own no land at all.

Table 2.--Basic Land Ownership Data for Three Villages in Klaten, Central Java*

Item	Village		
	Nganjet	Kahuman	Pluneng
Total population	1,466	3,262	2,274
Sawah areas (hectares)	64.38	167.04	99.25
Total area (hectares)	74.89	195.06	123.93
Number owning land			
Ricefields and house plots	129	231	150
Rice fields only	7	54	10
House plot only	51	145	218
House only	49	218	115
Number landless	74	4[a]	105
Average size of sawah holding (hectares)			
Owned by all land-owning farmers	0.37	0.59	0.62
Owned by sample farmers	0.42	0.52	0.75
Operated by sample farmers	0.46	0.60	0.51
Average yield per holding (ton)[b]	2.72	3.92	3.31

*Constructed from Utami and Ihalauw (33).

[a]Includes tani pituwas who cultivate land which is not inheritable.

[b]Yield measured in tons of wet stalk paddy.

in Nganjat and Kahuman 44 percent own sawah; in Pluneng, only 27 percent. This high degree of landlessness among the rural population is a function of past population growth, and the future obviously holds no immediate hope for improvement.

Neither Srihardjo nor Klaten should be taken as indicative of average Indonesian rural conditions. West Java and much of Central and East Java have somewhat more favorable man-land ratios. Still, unless there is a drastic change in present trends, Srihardjo and Klaten beckon menacingly as Java's future. They should and do cause sleepless nights for those concerned for Indonesia's rural development.

Within the constraints of farm size, input availability, and capital resources, the Indonesian peasant is a remarkably able agriculturalist.[1] While the econometric evidence is not strong, what there is indicates a market awareness, sense of economic calculation, and willingness to innovate (subject to fairly obvious constraints). The only aggregate production response study is that done by Mubyarto and reported in Mubyarto and Fletcher (15). The elasticity of planted rice acreage with respect to relative rice prices was small but significantly positive; approximately 0.3. Output elasticity was estimated at 0.4, implying a yield elasticity of approximately 0.1. The yield response could be due to a fertilizer response or more intensive cultivation techniques (planting, weeding, and harvesting) although the scope for the latter is quite small at the present time.

Mangahas, writing for the Bimas Evaluation Survey (20), analyzed a sample of farm responses to the question of what urea use would be at various fertilizer prices. His analysis of this survey data indicated an

[1]Hawes (9, p. 2) observes that the Indonesian rice farmer is one of the most skilled in Asia.

elasticity of demand for fertilizer with respect to fertilizer price of at least -3.0 for Java and -1.5 for Sumatra. Further analysis of experimental response functions indicated fairly similar results although the price elasticities rose strongly from high yielding varieties (-0.5 to -1.0) to national improved varieties (-2.0) to local varieties (-4.0). These results are not surprising in view of the initial fertilization levels for these three varieties and the nature of elasticity calculations under linear demand functions.

It is also possible to estimate an aggregate fertilizer response function. ~~Foodcrop~~ fertilizer use on foodcrops rose from nearly zero in 1959 to almost 200 thousand tons in 1970, but since considerable rice was produced without artificial fertilizer, the land must contain some latent fertility. Although a soil expert could probably determine the extent of this fertility with suitable soil samples, the information is not available for estimation purposes. Accordingly, an assumed constant level of latent soil fertility was added to the nitrogen fertilizer applications for each year, and a standard Cobb-Douglas response function was estimated with fertilizer application and area harvested as independent variables. The most satisfactory equation resulted when the level of assumed latent fertility was 100, somewhat higher than the average application level of artificial fertilizer for the period, with the results as follows:

$$\text{LOGSPROD} = -.743 + 1.272\ \text{LOGSAREA} + 0.109\ \text{LOGNFERT}$$
$$(-7.8) \quad (19.7) \qquad\qquad (7.0) \qquad R^2 = 0.990$$

where LOGSPROD = Log of sawah (wet land) production in millions of metric tons annually from 1959 to 1970,

LOGSAREA = Log of harvested sawah area in millions of hectares, and

LOGNFERT = Log of nitrogen fertilizer applications (in thousands of nutrient tons plus 100).

By sheer coincidence the fertilizer coefficient of 0.109 is precisely the same as that estimated for a six country cross-section sample of tropical Asian rice-growing countries for the years 1962 to 1970.[1] Assuming that farmers react appropriately to changes in the rice price to fertilizer price ratio, this implies an elasticity of output with respect to changes of fertilizer prices of about 0.122. This is consistent with the yield response coefficient of about 0.1 from Mubyarto's analysis because area is held constant here.

Despite all the above aggregate evidence on farm responsiveness it is important not to misjudge the seriousness of the constraints that stand in the way of increasing rice production. Many farmers remain heavily oriented toward subsistence needs, and these are becoming much more pressing as families grow and divide the land holdings diminish. Many traditional farmers refuse to use high yielding varieties, fertilizers, or pesticides. Several of the early high yielding varieties developed at IRRI were unsatisfactory in Indonesia--disease problems, consumer acceptance, insects, and the cost of the associated input package all discouraged farmers from further use of new varieties. Much research remains to be done before locally adapted fertilizer-responsive varieties are widely available and used.

Nor should the difficulties in getting fertilizer to the farmers be minimized, even should they want it. Fertilizer marketing channels have not had the same long time span to develop that rice marketing channels have. What fertilizer that has been marketed has usually been under government monopoly with little incentive for private traders to build up a vigorous network of retail fertilizer outlets, although PUSRI, the Palembang-based urea manufacturer, has made important progress in this area

[1]See Timmer and Falcon (32). The tropical countries in the sample were Indonesia, Ceylon, Thailand, Burma, Malaysia, and the Philippines.

since 1971.

All of these difficulties stand in the way of increasing rice production. Still, at the margin, the summary view ought to be one of price-responsive farmers. The degree of responsiveness is known only roughly, but the direction is not in doubt. Policymakers in Jakarta are faced with a peasantry that considers many issues in its agricultural decision-making. The problem of agricultural policy formulation in Indonesia is to work from the standpoint of "economics and . . .,".[1] But the important point is that economics is important to the farmer. He will not use fertilizer, pesticides, or high-yielding varieties unless they are sufficiently profitable to offset the risk and uncertainty he faces. A government concerned about modernizing agriculture can work at either or both ends of the lever--reduce risk or increase profitability. Other methods may seem more appealing from Jakarta, but they are bound to bump headlong into the realities of farmer behavior.

Marketing

Rice marketing, especially the processing sector, is relatively better understood than the rice farmer. Still, it is remarkable just how little is known about some of the basic marketing issues--the size of the marketed surplus, for example, or the extent of losses during drying, storage, and processing--and even more remarkable how little has been learned about these issues since the research for Mears' book was completed over a decade and a half ago.[2]

Estimates of the net marketed surplus are generally in the range of 25-35 percent, but these are somewhat misleading since the remaining 65-75 percent does not all stay on the farm for subsistence consumption. Instead, there is a significant pattern of selling rice at harvest time, both by

[1]Taken from Penny and Gittinger (16, p. 167).

[2]The basic book was completed in 1957 and a supplement was added to cover events to mid-1968. The entire volume was copyrighted in 1959 and printed in Indonesia in 1961 (13).

harvesters and farmers, and then repurchasing rice later in the year for home consumption. A handful of spot surveys have indicated recently that most families with less than 0.2-0.3 hectares of rice land (perhaps half the rural farm population) earn the majority of their incomes from nonfarm sources, primarily petty trading and day-labor. Their rice crop serves mainly as a seasonal source of cash and an all too brief improvement in their diet. But the majority of their food, even rice, must be purchased. It is hard to know whether to treat this large segment of the population as producers or consumers, i.e., do they benefit or suffer from higher rice prices?

Rice marketing in Indonesia, especially on Java, is exceedingly labor intensive, as might be expected. Starting with the harvest, which is traditionally open to all who wish to participate and which is done stalk by stalk with the ani-ani, or small finger knife, and ending with retailing from innumerable small stalls in the local markets, rice marketing provides employment for literally millions of people in Indonesia.[1]

The shared harvest, with the harvesters claiming anywhere from one-twentieth to one-fifth of the crop,[2] has been the traditional Indonesian job of last resort in the countryside, with some urban to rural back migration during peak periods. But under the impact of increasing landlessness and the high yielding varieties the traditional harvesting methods seem to be breaking down.

> Large numbers of people, most of them landless laborers, are traveling further and further afield to find harvesting work. With so many people trying to share in the harvest, the amount of work each harvester gets has been becoming smaller, so they try to get larger shares than custom dictates. In one village, farmers were asked if they ever refused to allow the itinerant harvesters to participate. The farmers felt they had no choice. One farmer said that if the landowners tried to exclude the itinerant laborers from participation in the harvest 'there would be war'...

[1]Some very rough quantitative estimates, primarily for the processing sector alone, are provided in Timmer (28).

[2]One-sixth or one-seventh shares were traditional before the high yielding varieties.

> In order to improve their shares, farmers have to limit the numbers of harvesters. The responses to this problem appear to be somewhat different for the smaller, poorer farmers than for the larger farmers. The small farmers appear to be more bound to traditional systems of harvesting and to be somewhat more at the mercy of the swarms of harvesters.[1]

Both Collier and Soentoro (6) and Utami and Thalauw (34) report that larger farmers are selling their harvests to outside agents who then use their own crews for the harvest. The result is larger returns to both the farmer and the few workers with close relationships with the harvest agent. But the hordes of itinerant harvesters increasingly excluded from the fields are being squeezed of what little income they had, and the consequences will be serious social disorders in the countryside unless alternative income sources, such as the kabupaten rural works program are found.[2]

Rice harvested stalk by stalk with the ani-ani is tied into bundles and dried and stored in this form. Apart from the sheer beauty of the stalk paddy system, it complements the labor intensive nature of rice marketing. For instance, most rice is carried from field to house and from house to mill on shoulder poles; bags of gabah (rough rice threshed from the stalk) are much more awkward than simply draping the stalk paddy over the pole, and the bags are expensive. This technique obviously places a high premium on rice varieties that do not shatter easily. The easy-shattering high yielding varieties have frequently occasioned a shift to sickle harvesting and in-field threshing, with corresponding lower labor requirements.

Rice is sun-dried before storage and milling. This is true despite the existence of several hundred mechanical driers in the countryside. Not more than one or two are actually operated, mostly because of high

[1]From Collier and Soentoro (6, pp. 37-38).

[2]See De Wit (37) for a description of this program.

operating costs and inexperienced operators. Some observers feel the social payoff to properly designed, installed, and operated mechanical dryers would be very high.[1] But the difficulties and costs of mounting a significant program are also great, and further development of sun-drying techniques may offer a better payoff.[2]

Rice milling has been more thoroughly analyzed than any other part of rice marketing. Rice milling on Java has virtually been transformed in just the past few years. The proportion of rice which is hand-pounded almost certainly declined from perhaps three-quarters of the crop to less than a quarter, possibly significantly less. Mechanical milling has rapidly expanded to take the place of hand-pounding (actually to drive it out), but the new mills do not much resemble the traditional large scale mills put up by the Dutch and Chinese in the 1930s or the small "huller mills" that were widespread in the countryside. Instead, most of the new facilities are modern, technically sophisticated rubber roll huskers with pneumatic (or Engleberg) polishers. These facilities are well suited to Indonesia's factor endowment. In some ways they are the happy result of a government "non-policy" at the micro-level coupled with appropriate macro-level policies with respect to rice prices, wage rates, and interest rates.[3]

Very little is known about private storage facilities for rice. No doubt the vast majority of the crop is stored in farmhouses and small village godowns. Most larger rice mills have some warehouse area for milled rice, but stalk paddy is usually stacked outside on concrete or brick aprons. If stacked properly and suitably dry, losses from rainfall, birds, and spoilage are small. Large rice merchants in urban areas have their own warehouses, and the majority of milled rice in private hands is stored in these. In 1972, the government food logistics agency (BULOG) had storage

[1]See the USAID financed study of rice marketing prepared by Weitz-Hettelsater Engineers (36).

[2]Some further discussion of the drying issue is contained in Timmer (28).

[3]For discussion of the whole choice of technique issue in rice milling, employment effects, evidence from the countryside, etc., see (28, 30, 31).

capacity, mostly rented, for about a million tons of milled rice. Since the rice shortage in 1973, BULOG has invested in substantial additions to its storage capacity.

The structure of rice marketing--the channels and hands through which the rice physically moves--varies considerably from province to province in Indonesia. Mears observes that two basic channels should be distinguished in virtually all areas: the private marketing path and the government marketing path.[1] A good deal more will be said about the government marketing effort below, as it has been one of the major policy implements of all Indonesian governments. But the government does not reach all the way down to the farmer in its marketing efforts and hence relies heavily on private marketing channels to get rice from the farm level to mills and beyond.

The market connection between mills and farmers may be as direct as the farmer carrying supplies to the mill himself, or it may be as indirect as to move the rice through several agents and sub-agents. A critical question for Indonesian rice policy for several years has been the size of the margin between the farmgate and the mill where BULOG operates its price support scheme. The margin between the mill and urban retail markets is also important because the level of rice prices, both harvest and preharvest, is judged from urban market prices. Research recently published by Atje reports that both margins are smaller than had previously been supposed. The average margin between the village and kabupaten town was about 11 percent, compared with expectations of about 30 percent, but the results are very tentative, based as they are on one region for one year.[2] Further such research is needed by policy-makers in Jakarta to provide a proper factual foundation for policy discussions and decisions.

[1]See Mears (13), especially Chapter V, and Appendix XIV for unusual marketing patterns in various provinces. Volume IV of the Bimas Evaluation survey (20) also contains an interesting analysis of survey data on rice marketing in Java and South Sulawesi.

[2]See Atje Partadiredja (2). The sample was taken in Central Java.

No discussion of rice marketing would be complete without some mention of the cukongs, the large, ethnic Chinese rice merchants who are frequently thought by government and citizenry to exploit Indonesia's frequent rice shortages to their own advantage. They are the ubiquitous middleman when rice prices start rising. No published source documents their behavior, influence, or even existence (apart from some rabid newspaper accounts), and no analysis of seasonal price margins has shown evidence of monopolistic price formation.[1] And yet it would be foolish to ignore their impact, both in the real world and on the state of mind of the government and populace. Research that sorted out these two impacts in a documented fashion would add immeasurably to our understanding of just how Indonesia rice marketing really functions.

Consumption

The structure of food consumption, like marketing in Indonesia, is somewhat better understood than production. On a national average basis more than three-fifths of carbohydrate calories (a large proportion of total calories) come from rice, with about one-fifth from cassava and somewhat less than that from maize. Sweet potatoes are an important source of vitamin A, and soybeans and peanuts provide needed protein, but they are consumed in small amounts.

Rice is the most important consumption good in the economy. It is the strongly preferred staple of nearly the entire population, even those who are constrained by poverty to eat mostly cassava or maize. (The sago eaters in the Eastern Islands are an exception.) Nearly a third (31 percent) of the total cost of living index for Jakarta is accounted for by rice alone, although the new index based on 1969-70 consumption patterns will reduce this to about a quarter. Rice is also the primary wage good

[1] The only such analysis conducted recently is by Goldman (8). Earlier analyses are reported by Mears (13).

of the economy. Many workers are paid directly in rice. To protect civil servants' salaries during Indonesia's chronic inflation, the government distributes rice rations. Clearly, rice plays an entirely unique role for Indonesian consumers, especially urban consumers.

The income elasticity for rice has long been an important policy parameter (mainly for planning, or justifying to food aid donors, imports of rice). There is apparent agreement that the cross-section elasticity is in the range of 0.6 to 0.7.[1] In addition, the evidence shows large differences by expenditure class, so that the poorest third of the population has an income (expenditure) elasticity of demand for rice near or above unity, while the upper third has an elasticity of less than 0.3. These wide differences by income class mean that projections of rice demand on the basis of per capita income growth are strongly dependent on the ultimate recipients of the higher incomes. A widely based increase in rice production has vastly different consequences (at least for rice demand) than enormous increases in timber and oil extraction.[2]

In view of the wide choice of carbohydrates available to most Indonesians, it would be surprising if there were no significant degrees of substitution among them on the basis of price. No convincing estimates of own-price and cross-price elasticities have yet been published, but Table 3 reports the results of some rough calculations made on 1968-1971 price and consumption data for the six basic foodcrops. It appears that correction for significant degrees of price substitution among commodities lowers the time series income elasticity for rice to about 0.3. Still, this may not be in complete contradiction to the cross section results if recent gains in per capita income have been very unequally distributed as the significantly lower rice prices through 1972 alone would dictate.[3]

[1]See Suhadi (23), Mubyarto (14), Sundrum (24), and Timmer (27).

[2]For some rough examples, see Timmer (27).

[3]These results are taken from an unreleased document produced in August, 1972, for BAPPENAS, the Indonesian National Planning Agency. See Timmer (29) for details of the methodology.

Table 3.--Income, Own- and Cross-price Elasticities for Six Basic Foodstuffs

Crop	Income elasticity[a]	Price elasticity on relative price[b]	Price elasticity on non-food prices[c]	Price elasticity on deflated prices[d]	
				Own	Cross
Rice	0.28 (0.60 rural) (0.10 urban)	-0.60	+0.10	-	-
Maize	-0.56	-1.48	-0.20[f]	-	-
Cassava	-1.94	-1.38[e]	-0.11[f]	-	-
Sweet potatoes	-0.36	-0.17	-0.15[f]	-	-
Peanuts	0.23	-0.53	0.07	-	-
Soyabeans A	0.12	-0.78	0.75		
B	0.77	-	-	-1.41	+0.34

[a]Calculated assuming per capita incomes grow 4.7 percent per year in 1969, 1970, and 1971.

[b]Own price relative to a weighted index of the five other basic food prices.

[c]Jakarta price index weighted as follows:

Food	0.0
Housing	0.5
Clothing	1.0
Miscellaneous	1.0

[d]Own and cross prices deflated by the Jakarta non-food price index (see footnote c above).

[e]Percentage change in cost of cheap calories from cassava, defined as follows:

$$\text{Percentage change in price} = \frac{(\text{cassava price change} * 2.17)-(\text{cross price change})}{2.17 * \text{cassava price (in base year)}}$$

[f]Thus, holding real income constant, an increase in prices of non-food items causes a decrease in consumption of maize, cassava, and sweet potatoes.

In short, the evidence shows high income elasticities for rice among low income groups and still moderate elasticities among higher income groups. In addition, considerable shifting about, at least at the margin, among the several basic carbohydrates seems to be called forth by relative price shifts. Thus the scope for influencing both rice producers and consumers through price policy is significant.[1]

[1] In addition, the price elasticity of demand for wheat flour is about -1.4 and the cross-price elasticity with respect to rice price is 1.2. See Timmer (26).

III. ANTECEDENTS OF MODERN RICE POLICY

Legacy of the Dutch (1650-1940)

Rice policy has been a function of rice prices for the entire recorded history of the Indonesian archipelago. Sunan Amangkurat I (1645-1677) prohibited the export of rice from Java in 1655 in response to a severe drought that sent rice prices up by 300 percent.[1] For the next two centuries rice prices were very unstable around a steeply rising trend, and in 1847 appeared the first recorded imports of rice to Java, from Saigon.

Basic Dutch policy was to minimize controls, subject to broadly satisfactory welfare levels for producers and consumers, although the latter generally fared better. In 1863, for instance, the import duty on rice was annulled following a bad harvest. Efforts were made to increase production to keep rice prices low, and when prices fell drastically in the 1880s as part of the world-wide overproduction of cereals, the Dutch response was to require that all government needs be supplied from domestic supplies. In 1911 poor crops and the approaching world war sent rice prices up again, and again exports were prohibited.

A long period of declining rice prices started in 1930 due to Asian overproduction and the world monetary crisis. Other food prices fell in step with rice prices, and farmers could not pay their taxes. The limit to the functioning of the free market had been met.

> In March 1933, the Government decided to intervene. It put an end to the free import of rice and restricted it by a system of licenses. This meant more than merely a checking of free importation; it signified the intention to work toward a system of self-supply with regard to rice. Javanese rice which until then had been offered chiefly in local markets had to find its way to all the Outer Provinces. In the few rice-surplus areas of these provinces, such as Bali, Lombok and South Celebes, an inter-insular rice trade had to be started. It was necessary to replenish its stock and had to become familiar with the intricacies of a

[1]The example is cited in BULOG (3).

purchasing system covering all the scattered home supplies. Care had to be taken to insure a stable price so as not to raise the cost of living in the rice-consuming districts. In short, no failure of crops and no record harvest in a single territory of the vast archipelago could ever be allowed to become the occasion of a just reproach that the Government had neglected the obligations which it had undertaken to be responsible for a steady and regular supply of rice...

Real strategy was expected of the leaders. Here a district might be temporarily closed to outside supplies and designated to supply itself; there it might be desirable to shut out foreign supplies and at the same time to organize an inter-provincial supply; in yet another place a primitive traditional barter had, as with a conjurer's wand, to be transformed into a modern export trade. Measures had to be taken on quality, packing, freight rates, time of delivery, etc. Rice mills had to shoot up from the ground...

The prices at which the imported rice was sold to the public were controlled; if they appeared to be much higher than the c.i.f. value, the price level was reduced to reasonable proportions by the expedient of sending further supplies to the district concerned. Provision had to be made, too, that stocks were not left over at the end of the period of scarcity, which might be used by speculators to repress the prices of the new harvest...

Another insoluble difficulty is posed by the contrary interests of producer and consumer. The price of the intensively raised Java rice will usually be higher than of that raised on the South Asiatic mainland. Is it permissable to keep the price of rice high by artificial means in times when the prices of Netherlands Indian export products are decreasing? Already it has occurred that the Government has had to support Javanese rice exports to the Outer Provinces with export premiums in order to hold down the price of rice in these provinces, while at the same time it was compelled to raise the import duties on foreign rice...

The peculiar character of both the raw material and the final product of the rice hulling mills made it inadmissible to allow a free growth of these plants. Danger was seen in the withdrawal of too much rice from the producer-consumers in some areas and the increase of the share of the Java mills in the paddy crops sold in five years from 12 to 21.5 percent. Therefore, in 1940, the provisions of the regulations under the industrial ordinance were applied to rice hulling mills with a capacity of 2 1/2 H.P. or more. In addition, the mills were organized and their sales centralized, on condition that they keep to the paddy purchase and rice selling prices fixed by government directive. To compensate for this restriction of liberty, the Government declared its readiness to take over any unsaleable rice surplus at the official price.[1]

A specialized government agency was clearly needed to implement this revolutionary degree of interference in the functionings of the rice market. It was established in April 1939, as the <u>Stichting Het Voedingsmiddelenfonds</u>,

[1]The running quotations are from a more extended discussion of rice policy in the Netherlands Indies during the 1930s by Boeke (4, pp. 112-115).

or VMF. Its finance for imports was gained from the Javasche Bank with government guarantee; finance for purchase of domestic rice was arranged with private banks.

Looking back with a thirty year perspective reveals how thoroughly the Dutch actions of the 1930s laid the path for what was to follow. The physical apparatus in the form of rice mills, transportation and communication networks, and the like, and the legal and institutional apparatus in the form of the VMF and regulations carefully organizing all aspects of trade in rice were put in place. In addition, and perhaps most importantly, a philosophy was established.[1] It argued that rice was too important to be left alone, and direct intervention in the market place, frequently with trade barriers, price ceilings and floors, and an ultimate reliance on cheap foreign imports to maintain stability, was the proper government response. Whether an efficient Dutch civil service adequately implemented these policies is a question without a full answer. Whether an inexperienced, underpaid, and demoralized Indonesian civil service could implement similar policies drawn from this inherited philosophy is a question with all too final an answer, as the history of the first two decades of the new Republic shows.

Efforts by the New Republic (1945-1958)

After the chaos of the war years and the fight for full independence, rice policy settled into the old Dutch pattern. The VMF was renamed BAMA (Jajasan Bahan Makanan), or Foundation for Food, in 1950, but its activities were unchanged. In 1952 this became the JUBM (Jajasan Urusan Bahan Makanan, or Foundation for Food Affairs), again with little changed activities.

Continuing inflation in 1950 and 1951 did bring a new policy that was a glimpse of the future: rice rations distributed in kind to civil servants

[1]Although some would argue that this philosophy had always been dominant in Dutch thinking. For a review (in Dutch) see De Vries (35).

and the military (and their families) to protect their real income. No longer was the government rice agency interested solely in avoiding high rice prices during scarcity and low prices during surpluses. It now had fixed distribution commitments to honor, month in and month out, commitments that had to be honored. A government that cannot pay its civil servants and army will fall. First claim on foreign exchange for imports and on the rupiah budget for domestic purposes went to rice.

The move to making partial salary payments in rice, while perfectly understandable and indeed laudable on welfare grounds, clearly served over time to politicize further a commodity that historically was already nearly beyond the control of normal market forces. Almost lost sight of for the next decade and a half was the fact that rice was not at all political to the rice farmer It was traditional, cultural, economic to him, but it was not political. These widely divergent views of the basic foodstuff were to cause periodic major upheavals in the Indonesian government.

Not that the farmer was forgotten during this time; he was the source of the great bulk of Indonesia's food supply. Perpetual shortages of foreign exchange to buy foreign rice frequently caused the government to turn hopefully to the countryside for increased output. Early attempts, e.g., the Kasimo welfare plan announced in 1952 which aimed at self-sufficiency in rice by 1956,[1] followed the early Dutch colonial extension pattern of olie vlek, or "oil spot" method. Good farming techniques were demonstrated at critical locations in the countryside and were to spread gradually from there. The Dutch experienced satisfactory qualitative results, but the rate of progress was much too slow to keep up with expanding population. The early Indonesian plans were never adequately staffed or funded.[2] Still, rice prices were stable from 1952 to 1954, and plans were made to eliminate

[1]See Higgins (10, p. 55).

[2]See Afiff and Timmer (1) and Soedarsono Hadisopoetro (22) for further discussion of this early plan and its ultimate failure.

imports in 1955 on the basis of the promising trends. But yields on Java in 1955 were lower than in the previous years, the JUBM was caught without stocks when rice prices started to rise sharply, and the production program fell apart in the scramble to arrange emergency imports.

Massive imports that arrived in 1956 were used to push rice prices down. Prices declined throughout most of 1956 and even dropped during the three pre-harvest months in 1957. But the "feeling of ease" in the rice market--that sense among urban consumers that there was adequate rice available--had been disturbed. Imports continued for the next few years on a large scale: an average of 770,000 tons per year from 1956 to 1958 compared with only 225,000 tons from 1953 to 1955. And yet rice prices more than doubled from early 1957 to late 1958 as part of the inflation created by budget deficits. The "feeling of ease," now badly shaken, was not to return for a decade.[1]

Sukarno's Guided Economy (1958-1966)

Physical rice rations had gradually been phased out in favor of cash payments for civil servants during the "quiet years" in the early mid-fifties. Rations for the army and police were never discontinued. But the rising prices in 1957 and 1958 brought a predictable response: reinstatement of physical rations for the entire civil service and dependents. Authority given earlier to provincial governors to set the price of paddy at which the JUBM would buy supplies was extended to the ceiling price at which the JUBM could sell. This action, coupled with the increased reliance on physical distributions, fragmented Indonesia's rice markets very badly. Governors of surplus regions kept prices extremely low in the interests of their urban consumers and reduced budget demands for providing rations for their civil servants and military, while governors of deficit regions, mostl

[1]An excellent account of the events during this time and the government's response with respect to rice policy is contained in the official BULOG history (3).

in the outer islands, found ways to tap local export earnings in order to import rice. Jakarta was supplied by the authority of the central government to allocate foreign exchange and through the residual supplies of the JUBM.

The costs of this strategy were becoming apparent before the end of the decade. In a clash between foreign exchange for fertilizer or for rice imports, rice in the short-run always won over rice in the long-run. As Indonesia's balance of payments deteriorated even further, the reality of the impact of monthly distribution requirements on Indonesia's rice policy was a mortgaging of the future for the present. It was a mortgage that became increasingly expensive in terms of foreign exchange.[1]

Once again the government, now under the banner of Sukarno's Guided Democracy (and economy), turned to the farmer for help. An ambitious three-year program for self-sufficiency was announced in 1959 that included:

1. Intensification of rice cultivation through the use of "padi centers;"
2. mechanized rice cultivation on dry lands (that needed clearing first); and
3. clearing and cultivation of tidal lands.[2]

Only the "padi center" program began in 1959. Each center was to coordinate intensification on about 1,000 hectares; by 1964; 1,500,000 hectares were to be in the program. Farmers in each area were given credits in the form of fertilizer, seeds, and cost-of-living funds, with repayment to be made in kind with dry stalk paddy, generally at a price below the prevailing price in local markets.

All of the tasks of rice intensification--education, fertilizer and pesticides, improved seeds, and a paddy collection mechanism for repayment--were brought together in the "padi center." Still, the program failed.

[1]No satisfactory time series of rice imports as a percent of the value of total imports seems to exist, no doubt due to the great unreliability of both rice import data and total import data, especially for values.

[2]The discussion of the "padi center" approach to rice intensification is adapted from Afiff and Timmer (1, pp. 137-138).

Imports were larger in 1962 and 1963 than in 1958 or 1959--over a million tons in each of the latter years. Rice production was lower in 1961 than in 1960.

The causes of the failure were important in designing subsequent programs and are also highly relevant to understanding Indonesian rice policy in the early 1970s.

First, farmers reacted very unfavorably to the strong centralization of the program in general and to the low stalk padi collection prices in particular. Despite political appeals, the farmers felt the government was cheating them.

Second, in order to bypass existing bureaucratic bank procedures that prevented most farmers from receiving credit, the program arranged easy credit at the "padi centers." This was very badly abused, both by the officials giving the credit and by the farmers receiving it.

Third, and especially important for understanding present problems, the program was set up on very short notice. Each "padi center" was immediately responsible for the full intensification package, and consequently most were seriously understaffed with competent technicians. In many cases these personnel were available and unutilized in several existing agencies.

The politization of rice reached full bore under Sukarno. It was "the main food of the people whose distribution and spreading in the guided economy was not allowed to be made an object of trade or of speculation."[1] As the domestic economy deteriorated under the brunt of exploding government deficits, spiraling inflation, and negative investment, the rice economy crumbled as well. To pick the worst years, rice production dropped by 13.6 percent on Java from 1960 to 1964.

[1]The quote is from the BULOG review of rice policy during the Sukarno period (3).

> If only the rather modest trends of the late 1950's--an increase of 1.5 per cent per year in production--could have been maintained on Java, output in 1966/67 would have been 5.61 million tons instead of 4.82 million tons, or 16.4 per cent higher than what was actually realized.
>
> The production problems on Java in the early 1960's were caused jointly by declining area harvested and declining yields. Yields dropped continuously from a 1962 high of 1.23 tons of milled rice per hectare to a 1966 low of only 1.13 tons per hectare, which was no better than in 1958. Compounding the problem of lower yields, and partly causing them, was a prior decline in area harvested. This was mostly due to a deterioration, through neglect and lack of funds, in the rather sophisticated irrigation network on Java. As the extent of controlled irrigation declined, so did the area successfully double cropped. Inadequate and uncertain water supplies also led to lower yields.

The failure of the farmer to treat his rice in the political spirit desired intensified the foreign exchange demands of imported rice. From 1961 to 1963 over a million tons a year were imported, and then the foreign exchange simply ran dry.[2] Imports the following three years averaged only 290,000 tons and rice prices spiraled out of hand.

If it is true that marketing is "the very glue that holds the economy together," then the economy in the mid-sixties was quite literally coming unglued.[3] Typically, the highest retail rice price in provincial capitals in Indonesia would be four times the level of the lowest retail price. The entire economy, rice marketing an important and special example, was unable to perform the very basic tasks of marketing--matching seasonal and regional price differences to the costs of storage and transportation. "At fault were all the factors common to underdeveloped market economies--shortage of credit, lack of communication and information, inadequate marketing facilities (especially on the outer islands)--and these were accen-accentuated in Indonesia by the rapid inflation and deteriorating infrastructure."[4]

[1]From Afiff and Timmer (1, p. 133).

[2]The first "Survey of Recent Developments" in Volume 1 of the Bulletin of Indonesian Economic Studies, June 1965, pp. 2-3, made the following observations on availability of foreign exchange:

> Indonesia's trade has been declining in recent years. Exports have fallen steadily since 1959 from the annual level of about 900 million dollars which prevailed in the fifties, largely because of lower prices. Imports have contracted even more sharply since 1961, restoring the normal balance of trade surplus. However, there have been large deficits on current account in the balance of payments, owing to heavy invisible imports (especially transport costs and oil company profits). These deficits have been caused by borrowing and running down reserves. Net funds from these two sources, which averaged over 300 million dollars annually 1961-63, have now contracted owing to mounting repayment obligations and the extremely low level to which foreign exchange reserves have sunk. Though Soviet loan repayments have been rescheduled, and though new credits are still available, it appears that current exports of goods and services will have to balance imports this year for the first time since 1959. This explains the government's anxiety to stimulate exports and prune imports as much as possible (25).

[3]Timmer (28, p. 59).

[4]The quote is from Afiff and Timmer (1, p. 135), which also contains a much more extensive discussion of the regional rice price instability during this period.

But the government's penchant for intervention made matters far worse. Rice mills could operate only for the government. Despite attempts by the central government to regain control of regional rice price and movement policy from regional administrators, authority and proper communications were lacking, and most regional administrators protected their own local interests before thinking of Jakarta. Since the national government was unlikely to be of much help in times of shortage, most regional administrators simply prohibited the export of rice from their regions, no matter how low prices fell. Rice trade was easily taxed, especially at military checkpoints, and it probably provided the bulk of finance for surplus and deficit regions alike. "Rice policy, such as it was, emphasized consumer interests and local revenue generation. It is no wonder that production suffered and prices were unstable."[1]

The Stabilization Years of the New Order (1966-1970)

Rice as a tool of stabilization and stable rice prices as the intended result date back at least to Sunan Amangkurat I. Still, no government since Dutch colonial times has pursued the goal with quite the intensity, resources, or skill that the Suharto government brought to the task during the last third of the 1960s.

The abortive coup attempt late in 1965 seemed the climax of a nightmare, except the unreality of the previous half decade turned out to be real. The year ended with a 1,000 to 1 revaluation of the rupiah. By March of 1966, when leadership was transferred to the triumvirate of General Suharto, Adam Malik, and the Sultan of Yogyakarta, an evaluation showed no rice in the warehouses of the food energy (then called BPUP), no foreign exchange in the treasury, and an inflation rate of 600 percent per year.

[1]Afiff and Timmer (1, p. 135). A great deal more could be added about the details of national rice policy during the Sukarno era, but the essence is sufficiently conveyed above. The BULOG reference volume is the best source for further information (3).

The first task was to find new supplies of rice.

> In the months December 1965 to March 1966, there was an acute shortage of rice, particularly for government employees and members of the Armed Forces. There were sufficient stocks in the free market, but depletion of government stocks led the authorities to reverse the earlier decision to stop imports...
>
> Some Indonesian experts doubt whether Indonesia needs to import rice in the sense that domestic production is insufficient if properly distributed to meet reasonable minimum requirements of the population. Even these experts, however, agree that imports of rice of the order (of $30 million) will be unavoidable because the Government is unable, organisationally and politically, to purchase from domestic sources the rice needed by the Armed Forces and for distribution in kind to government employees. To import rice for these purposes is both easier (to the cities by ship from abroad than by land transport from the villages) and cheaper (at the unrealistic official exchange rate applied to government transactions). Any attempts to do without rice imports would run into strong opposition from the politically powerful beneficiaries, the military and the bureacracy.[1]

The importance of obtaining rice for these groups, especially the military, is reflected by the highly uncertain political situation immediately following the coup attempt. The military had crushed the coup, but Sukarno was still in power. His sympathies, moreover, remained with the coup organizers, and so the military was left to fend for itself. To do so, a network of national logistical commands was set up (KOLOGNAS) to provision the military and civil service. It obtained some rice domestically, but the bulk of its supplies came on special arrangement from Burma and Thailand and from a surprisingly fast offer of PL-480 rice from the United States.

There was no hope for stability in 1966. The budgetary process was too disrupted, the political situation much too unsettled, and the economy too shattered for hopes of anything but mere survival. And although rice prices increased more than three-fold during the year, the country did survive, and by early 1967 General Suharto emerged sufficiently powerful to set the country on a course of stabilization. The military emergency over, the KOLOGNAS were disbanded and were replaced with BULOG, the presently functioning Food Logistics Agency, directly under the control of the President.

[1]From the June 1966 "Survey of Recent Developments," pp. 14-16 (25).

For once the stabilization strategy involved more than massive injections of imported rice. From budget deficits double and triple the total government revenue, the budget was to be balanced, quarter by quarter. From government loans with face values of 6 percent per year and negative real values, loans henceforth charged a real positive rate of interest commensurate with the capital scarcity in Indonesia. Monthly interest rates early in 1967 from the State Bank ranged from 6 to 9 percent depending on the priority of the sector involved. By mid-July it was possible to reduce them to 3 to 5 percent per month.

Naturally, the food supplies side of stabilization was not ignored. Strategy called for a double-edged attack here. Large imports of food aid commodities, mostly rice and wheat flour, were arranged to keep rice prices under control directly. But the counterpart rupiah funds were channeled to the government's Development Budget, which in the first few years was to draw almost exclusively on aid financing for support. The Routine Budget was financed entirely from domestic revenue collections, especially import duties. Ultimately the surplus from the Routine Budget was also channeled to the Development Budget.

From an inflation rate of 650 percent in 1966 the rate was reduced to 120 percent in 1967. Still, the year was very nearly a disaster for the new government because rice prices were less stable than the economy as a whole, something of a reversal for Indonesia. Early in the year rice rations were discontinued; the rice agency simply ran out of supplies. The situation eased as the wet season harvest arrived in May and some imports also started coming in. The old trade-off between short-run and long-run was resolved in the historic fashion, but new sentiments were being heard.

> There was a strong case for using...foreign exchange to buy fertilizer rather than rice. There was indeed increasing recognition of the short-sightedness of a price policy which, by artificially keeping down the price of rice while allowing the price of imported fertilizer to rise through currency depreciation, made it uneconomic for farmers to buy fertilizer to expand rice production But to tackle the problem by raising the price of rice was enormously difficult politically; and to reduce the price of fertilizer would require new subsidies in the teeth of the Government's resolve to abolish subsidies.[1]

Still, the Ministry of Agriculture did agree to carry a subsidy on ure fertilizer of Rp 3.5 per kg, permitting a reduction in its price from Rp 21.5 per kg to about Rp 18.

Despite the government's resolve to keep rice prices low and despite a fairly successful domestic purchase program that brought in over 500,000 tons of milled rice in the face of obvious administrative and financing difficulties, limited supplies in the world export market due to strong competition from China, Japan, and the Philippines meant there was not enough rice available to meet demands. A severe food shortage gripped Indonesia when the dry season rice crop turned out sub-average. From the harvest low at the end of May rice prices doubled by the end of October and redoubled by mid-January 1968.

> One result of the rice crisis was an increase in the cost of living in September which ruled out any possibility of keeping the rate of price inflation for 1967 as a whole within the 65 per cent target. Since the cause was from the side of supply, not demand, this did not necessarily imply a serious impairment of inflation control, however painful the additional burden on those with low and relatively fixed incomes. Until the next harvest, the food situation seemed likely to remain a major preoccupation for the Government, not least for its political implications. The student newspaper's editorial comment that 'rice is the barometer of the economic situation in Indonesia'[2] was bad economics but important politics.
>
> Provided, however, the food situation remained manageable, politically as well as socially, the September rice crisis, not unlike the August banking crisis, might in retrospect appear to have been a blessing in disguise. After the deliberate increase in public utility charges and other previously subsidised prices

[1]From the "Survey of Recent Developments," June 1967, p. 14, by H. W. Arndt (25).

[2]Harian KAMI, September 14, 1967.

> in February, the uneconomically low price of rice had remained as the single most important distortion of the price structure. Until September it seemed doubtful whether the Government would be willing to court political trouble by raising the price of rice closer to the cost of imported rice or to the level at which it would pay farmers to buy fertilizer to produce more rice. The September crisis forced the Government's hands.[1]

The crisis refreshed short memories as to the key role of rice in any stabilized scheme. It accounts for 31 percent of the Jakarta cost of living and has important indirect effects on other economic sectors due to its dominant role as the wage good.

> But the psychological and political significance of the price of rice is much greater still. It was the fact that to most Indonesians the price of rice is the touchstone of price stability which made the confidence reactions to the sudden rise in the price of rice in September and again in January so devastating. If... both the rise in the cost of living and in the exchange rate went further in December and January than the domestic monetary situation would have led one to expect, the main explanation is undoubtedly the collapse of confidence that followed the government's loss of control over the price of rice.[2]

The hard-learned lessons of 1967 had immediate returns in 1968. The government determined to pay farmers an incentive price for their surplus rice, based on the Rumus Tani (farmer's formula), which says the price of milled rice and urea ought to be about the same for the farmer. Complementary to this incentive was a major effort to extend and improve the BIMAS (mass guidance) rice intensification program, which had its beginnings in an experiment at the Bogor Agricultural Institute in 1962-63. Fourth and fifth year students were sent to live in villages with farmers and demonstrate modern agricultural technology. The yield results were very impressive, nearly five tons of dry stalk padi per hectare higher than nonprogram yields in 1965, when about 10,000 hectares were in the program.[3] By 1966 the various universities participating had withdrawn because the government tied the BIMAS credit repayment to rice agency procurement, at low prices, a

[1]From the "Survey of Recent Developments," October 1967, pp. 32-33, by H. W. Arndt (25).

[2]From the "Survey of Recent Developments," June 1968, pp. 3-4, by H. W. Arndt (25).

[3]The BIMAS program has been the subject of extensive discussion. For the history of the early program, see Roekasah and Penny (21), for a mid-life review the article by Mears and Afiff (12), and for a recent major analysis, the BIMAS Evaluation Survey (20). The following discussion draws heavily from the summary by Afiff and Timmer (1).

plan that doomed the earlier "padi centers." In 1966, under complete auspices of the Department of Agriculture and its extension agents, the program encompassed over one and a half million hectares, with dry stalk padi yields exceeding nonprogram yields by only 2.1 tons per hectare.

While the regular BIMAS program went forward as usual in 1968, shortages of fertilizer supplies and domestic credit led the government to try another approach as well, BIMAS Gotong Rojong (BGR, or "mutual self-help program"). The government contracted with several foreign companies (CIBA, Geigy, AHT, Hoescht, Mitsubishi) to provide rice areas with fertilizer and pesticides to increase yields. Seed, cash allowances to the farmers, and equipment and advice to extension workers were also to be provided. In actuality, however, the contracts were mostly for suppliers short-term credits for fertilizer and pesticides of their own manufacture (some of which were of dubious relevance to Indonesia and some, for instance the pesticides that killed the fish in rice paddies, which were disastrous). These credits, plus a substantial management fee, were to be paid within one year by the Central Bank on the basis of a fixed fee per hectare. BULOG was to collect one-sixth of the stalk paddy harvest from farmers put under the program as repayment.[1]

> Relative to what had been achieved under earlier programs, and relative to the availability of most production inputs on soft-loan terms, BGR was a production and financial failure. The quantity of padi received from the farmers as repayment of the credit was substantially below expectations. The shortcomings had to be drawn from budget revenues to enable payment by the Central Bank to the contractors, and this was a serious drain on resources.[2]

Since BULOG still needed substantial imports to meet its distribution requirements, the foreign exchange for BGR was a double loss. Still, 1968 was a good year for rice price stability. An excellent harvest and the incentive price paid by BULOG permitted domestic purchases of 600,000 tons.

[1]"Put" is the operative word here. The farmers had no choice in participation, nor in selecting amounts or types of fertilizer or pesticides. They did control whether the fertilizer was applied (much was sold in black markets), but a good deal of pesticide application was by airplane. The predictable horror stories resulted of livestock and villages being sprayed rather than sawah.

[2]Afiff and Timmer (1, p. 140).

Imports exceeded 625,000 tons. Prices in Jakarta in December 1968 were actually lower than in December 1967, and they continued to decline through the preharvest period from January to March 1969. Prices continued to fall throughout the 1969 harvest to very low levels, as BULOG was unable for administrative reasons to buy more than 200,000 tons despite a good wet season harvest. A poor dry season, plus a shift in crops away from rice by farmers disappointed in the wet season crop, left supplies smaller than anticipated. BULOG's failure to purchase adequate quantities domestically and reduced imports, due to a good harvest and low prices, meant inadequate stocks late in 1969 to keep rice prices stable. The situation was brought quickly under control, again with emergency imports (with seriously inadequate financial accounting), but the experience served to burn anew the just-healed scars of 1967.

IV. MODERN INDONESIAN RICE POLICY

The Evolution of Current Policy (1970-1973)

Although the First Five-Year Development Plan (Repelita) was drafted in 1968 and inaugurated April 1, 1969, it was a document of the seventies. It was formulated on a premise of stability which came to full fruition in the 1970-1972 period, and it was built around rice.

> It was inevitable that rice, because of its paramount importance in the national economy, would be called upon to play a dual role...Since rice production and processing were the chief source of livelihood for about half the Indonesian population, production would have to increase if there was to be any widespread increase in per capita incomes. And...because of the new, high yielding rice varieties (partly developed from Indonesian rice strains), Indonesia's comparative advantage, at least in the short run, lay in agriculture. The most lucrative import substituting investments were likely to be in rice production. Self-sufficiency in the basic foodstuffs became the leading priority in Repelita.[1]

The Plan fortunately did not spell out program details. The failure of BIMAS Gotong Rojong and the BULOG domestic purchase program in 1969 required major changes if self-sufficiency was to be achieved. And major changes in both areas were soon forthcoming. The poor performance of BIMAS Gotong Rojong especially was interpreted as a failure of the "command" nature of the program. When BGR was suddenly discarded in mid-1970, it was replaced by a highly incentive-oriented "perfected BIMAS" organized around "village units." The program stressed getting profitable inputs, subsidized credit, and information out to the farmers and letting them decide whether and how much to participate. Fertilizer distribution was partially turned over to the private market, with a charge to sell for no higher than the ceiling price of Rp 26.6 per kg. for both urea and TSP. The price required a subsidy to distributors of Rp 7-8 per kg. (in 1971) which was covered from the Development Budget.

[1]Afiff and Timmer (1, p. 136).

The second innovation was to implement an effective floor price for stalk paddy. With the lesson learned several times over that farmers do not like to repay debts with stalk paddy at below market prices, BULOG was instructed to prevent the price of village dry stalk paddy from falling below Rp 13.2 per kg. Earlier attempts to use the Rumus Tani as a guide to price failed due to great uncertainties on the part of local BULOG agents as to just what price to pay. In 1968, for example, it ranged from a low of Rp 27 per kg. for milled rice in Lombok, to a high of Rp 46 per kg. near Jakarta. Such regional variations might have made sense in terms of the realities of local fertilizer prices, but they did little to help integrate the Indonesian rice economy.[1] With a national fertilizer price ceiling established, it was possible to establish a national floor price. Although the floor price was stated as Rp 13.2 per kg. for stalk paddy in the village, it was implemented by BULOG by paying Rp 36 per kg. at rice mills.[2]

With such forceful actions taken in behalf of the farmer, the government felt it could likewise commit itself to a nation-wide ceiling price for rice: medium quality rice in urban markets was not to sell for more than Rp 50 per kg. This permitted an expected spread of between Rp 8 to Rp 10 per kg. between the seasonal low price and the seasonal high price. Although this margin was very narrow in terms of prevailing interest rates the private trade did seem to find it profitable to carry stocks in 1970 and 1971.

By mid-1972 the new programs looked like major success stories. Rice production was exceeding the high targets set in Repelita, BULOG was so successful it took over handling responsibilities for wheat flour and sugar, and the National Planning Agency (BAPPENAS) and Ministry of Finance

[1]See, for instance, the "Survey of Recent Developments," February 1968, p. 28, by Ponglaykim, Penny and Thalib for a discussion of regional price variations (25).

[2]A full discussion of the price-oriented program is found in BULOG (3), and an analysis is provided by Afiff and Timmer (1).

were trying to find sources of revenue to take the place of food aid counterpart funds, which seemed about to disappear.

Instead, the generally good weather from 1968 to 1971 ran dry. In addition, BULOG moved too fast to improve its buying standards in order to reduce storage losses, and ended up bying very little rice in 1972. In a repeat of 1969 (and 1967), the dry season was poor, BULOG stocks ran out, and imports were suddenly hard to find. The government lost control of the rice situation and reverted to emergency imports as the solution. More than a million tons of very expensive rice poured into Indonesia from mid-1972 to mid-1973. A year earlier it had seemed that no imports at all might be needed.

A new government procurement policy for 1973 emerged almost unnoticed from the 1972 rice crisis. Since 1970, when the original "Village Units" had been organized as part of the "Perfected BIMAS" scheme, a number of "Village Unit" cooperatives had performed custom rice milling and even purchasing for their members/participants. Complaints were heard during the wet season harvest in 1972 that the new BULOG buying standards had prevented the cooperatives from selling any rice to BULOG because the milling equipment was small scale and produced 30-40 percent brokens. East Java alone, it was said, could have provided 400,000 tons of milled rice if only BULOG would have bought it.[1]

For 1973, then, the government declared that the "Village Units" or BUUD (Badan Unit Usaha Desa), would play a major role in rice procurement by purchasing from the farmers, processing in their own facilities, and selling to BULOG. It was expected that about half of BULOG's target of 900,000 tons from domestic supplies would come from the BUUD.

[1]Considerably later in the year BULOG tried to take them up on this, but whatever stocks there were had already been sold elsewhere.

> What seems actually to have happened in East Java is that in the first half of May, the first two weeks of the delayed wet-season harvest, the BUUD were instructed to pay farmers only Rp 18-19 per kg of gabah [rough rice]--only marginally above the then ruling support price--and to sell milled rice to BULOG at Rp 45 per kg. Since the market ex-mill price was reported to be about Rp 55 per kg, and the price at farm level therefore presumably at least Rp 22 per kg, there was widespread reluctance by farmers to sell to the BUUD. The provincial government, apparently anxious to prove to Jakarta its ability to meet the BULOG procurement target for the province, thereupon gave orders that farmers must sell to the BUUD first.[1] According to press reports, soldiers were employed in some areas to enforce the order, and on 18 May a regulation was issued banning rice shipments from one province of Java to another so as to 'prevent speculation by profiteers who bought up large amounts of rice at one place and sold supplies at another place where they were short...'
>
> The attempt to force farmers to sell to the BUUD below the market price is liable to have undermined the incentive of farmers either to produce more rice or to support the new scheme for rural cooperatives.[2]

The shakiness of the commitment to real incentives to farmers is not merely a function of the prominence of the military in the government with their normal and understandable preference for commands. This explains some of the more obvious short-run abuses, but the fundamental and underlying problem is a failure to appreciate the desirability and even necessity of adequate incentives to farmers as part of a production program. This more fundamental problem clearly traces much further back and it underscores the fact that a true incentive program for rice intensification has never been given a fair test in Indonesia.

Objectives, Policies and Constraints

The interaction of objectives and constraints in the formation of Indonesian rice policy has been implicit throughout the discussion so far. It is time to make the interaction explicit: to indicate how constraints on Indonesian policy-makers molded their decision process as they sought to reach their objectives. Policy-making is never static, and the major

[1] "In places where no BUUD was in effective existence, the order was reportedly complied with by an official representing the BUUD sitting in the private rice miller's office and certifying, for a fee, that the paddy had been sold to a BUUD."

[2] From the "Survey of Recent Developments," July 1973, p. 7, by H. W. Arndt (25), as is the above footnote.

reason for presenting the historical evolution of rice policy was to set the proper dynamic context.

The starting point is to draw a workable distinction between objective and constraint. While the difference seems obvious enough in the algebraic formulation, in the real world, and especially in the real world of political economy, the distinction becomes blurred indeed. Part of the difficulty is the lack of substitutability built into linear programming. It is difficult to reflect the scope of possible trade-offs--more lower skilled clerks for fewer qualified statisticians, efficiency of the customs service against budget allotments for upgrading--within the limits of fixed coefficients and constraints. Since the discussion is not quantitative, the problem is not so severe, and yet the dilemma of what is an objective and what is a constraint will appear over and over. To some extent the dilemma is that of the policy-maker himself. He does not know if an apparent constraint on his action is a real constraint (rather than a strongly-felt objective) until he tries to break it.

It should be obvious from the list of potential objectives in the Introduction that rice policy in Indonesia has pursued a goodly number, and with sharply varying weights over time. Early Dutch objectives stressed generation of government revenue very highly, mostly from the land tax. The most visible constraint on this policy was the farmers' ability to pay. Only when tax arrears reached substantial proportions was the government willing to charge import duties (or increase them). Farmer welfare did not enter significantly as an objective in its own right until the "Ethical Policy" of the early 1900s. Consumer welfare and price stability must also be accorded substantial weight in Dutch objectives. The Dutch themselves worked in and ruled from the cities;

urban populations were more articulate and concentrated than the countryside. The continuously visible constraint was the possibility of urban uprisings during rice shortages. It was much better to prevent them at a welfare cost to the farmer than to suppress them by force.

The Dutch policies of the 1930s seemed to reflect a broader-based set of objectives. With the Great Depression causing country after country to turn inward in search of solutions, the Dutch emphasis on self-sufficiency within the archipelago made some sense. What is still somewhat difficult to understand was the "command" nature of the solution. Perhaps, in light of Boeke's doctrine of dualism and the economically unresponsive peasant, the Dutch felt that normal economic incentives would simply go unanswered--a certain binding constraint on their successful implementation. The result, as has been observed, was to set a frame of mind of a whole generation, and perhaps more, of Indonesian leaders as well. The potential lack of (immediate) economic response to incentives seems to loom large in most Indonesian minds as a serious constraint on policy-making. It is, unfortunately, a constraint that appears larger the more immediate and pressing is the problem. Since Indonesia has been living in a perpetual series of short-run crises, a true test of economic responsiveness (e.g., by rice farmers) has never been attempted.[1]

Early Indonesian policy-makers inherited the same set of constraints faced by the Dutch and, somewhat surprisingly, most of the same objectives. Not surprisingly, the resultant policy instruments were little changed as well. However, the persistent inflation faced (created) by the Indonesian government in its early years soon presented a dilemma: how to protect civil servant and military standards of living on fixed money incomes without further feeding the inflation by large-scale pay raises. Here,

[1]It is possible that the constraint was interpreted as weakness in the marketing system itself, so that economic incentives would not be felt by the various agents. The net effect is the same although upgrading a marketing system is probably easier than teaching unresponsive farmers to become economic men. As such, this view would have been even more shortsighted.

maintaining the welfare of a very special class of consumers became a major objective of the government. The operative constraints this time were less involved with the functioning of the real economy and much more tied into the governmental process itself. Without the bureaucratic resources (or possibly the economic base, although this is less certain) to collect enough revenue to meet the desired budget expenditures (a perennial task for less developed countries trying to catch up in a hurry), inflation was inevitable. But the inflation weakened the bureaucracy still further by undermining its salaries. To cut into this vicious circle the government embarked on a whole new policy direction: distribution of part of the salary in kind, especially in rice.

There was no obvious intent at the start that this policy would be at the expense of farmer welfare, and no necessity that it be. But the constraints that made the policy desirable in the first place made forced government procurement at below market prices almost inevitable. How else could government expenditures be held under control than by buying the rice as cheaply as possible? Otherwise the civil servants might just as well be paid a cost of living allowance in cash with significantly less logistical effort.

The almost inexorable requirements of the rice ration and its interaction with the inflation that resulted from weakness in the budgetary process evolved into the critical objective/constraint interaction for domestic Indonesian rice policy in the late 1950s and 1960s. But its impact went well beyond the practice of buying as cheaply as possible from farmers. The necessity to maintain adequate distribution stocks, when coupled with the omnipresent objectives of maintaining low and stable consumer prices in the cities, meant that substantial imports of rice

were required. These imports were a major drain on Indonesia's foreign exchange, and it was concern for deteriorating balance of payments rather than farmer welfare that dictated the several rice intensification schemes in the first two decades of the Republic's history. All of those schemes foundered, however, on the necessity of the government to collect cheap rice from the farmer. What was ultimately driving the system was the need to meet fixed distributions of rice rations.

The intensity of this driving mechanism was furthered, not lessened, as the Suharto government gradually took power. By then the budgetary process was an absolute shambles, the inflation had totally eroded the buying power of a civil servant's money wage, and the only claim the government had on its bureaucracy (and even military) was the salary it paid in kind. No government could afford to lose this last vestige of authority and still hope to rebuild a viable civil service. Certainly the New Order placed the highest priority on it in the first few years of its existence.

But this time a long-run economic vision seemed to appear behind the short-run political necessities. Although the problem of making the civil service an efficient, honest, and workable bureaucracy is one of the major tasks facing the government,[1] a great deal of progress has been made from the depths of the mid-sixties. By 1970 serious plans began to be made to phase out physical rice rations gradually. Indeed, they were made in 1968, only to be cut short by the mild shortage in 1969.

Even with the rations intact, the evident stability in both rice prices and the general economy made them seem less important to both recipient and distributor. The availability of large quantities of food aid rice from the U.S. and Japan significantly altered the foreign exchange constraint (as have soaring revenues from Indonesia's oil exports in the past

[1] For a good discussion of the so-called pegawi problem, see the "Survey of Recent Developments," November 1972, pp. 24-30, by P. McCawley (25).

several years). If the government had any new objectives with respect to raising farmer welfare, the old constraints were sufficiently relaxed to make a significant effort possible. It is in this light that the following statement on self-sufficiency from Repelita I should be interpreted.

> Production of food will be increased at a rate that will permit within the next 5 years the elimination of rice imports. A supplementary aim is to improve the nutritional value of the consumption of the average Indonesian through increasing the production of foodstuffs which contain animal as well as plant protein, especially fish, nuts and beans. The positive effect of achieving the above objectives is that Indonesia will not have to import rice, which means that scarce foreign exchange can be used to import the capital goods and raw materials needed for the development of other sectors, especially the industrial sector. Moreover, increasing the production of food will result in raising the income of the food producers. This will improve the standard of living of the farmers who for such a long time have lived in poverty and misery.[1]

From 1970 forward the rice intensification scheme was reinforced by efforts to pay farmers an incentive price for their rice. Naturally, this did not mean an abandonment of consumer interests, and the ceiling price policy was in fact implemented much more vigorously by BULOG than the floor price policy. Old habits are hard to overcome even when an attempt is made, and no attempt was made to argue that urban consumer interests no longer counted. But just as when a situation is deteriorating, all the circles are vicious, so too when a country starts back the return path, at least some of the circles become beneficial. This was the impact of stability. With stability established in the minds of both the people and their leaders, new objectives suddenly became feasible that were impossible before. Stability meant that rice rations were first of all not quite so critical to the recipients and secondly, that they were not so difficult to obtain. With the pressure off, the traditional low man on the objectives list in Indonesia, the farmer could finally be helped. But it all depended on

[1]From the First Five-Year Development Plan (19, pp. 4-5).

stability.

The new floor price policy was designed both for its production effects and contribution to farmer welfare. Given the constraints BULOG was under, especially regional agents who were long accustomed to allowing (even pushing) the price of rice at harvest to fall as low as possible before making purchases, implementation of the floor price was successful. Certainly the farmers seemed in a much improved position relative to 1969 (see below for further evaluation on this point). But defending the interests of farmers was not automatic for BULOG. Its changed buying standards and seeming unconcern about delays in opening purchase credits for the wet season harvest in 1972 hit hard at farmer welfare.[1]

From there the story runs as if carefully rehearsed. Domestic procurement fell far short of expectations (partly, it is true, because of an unspectacular wet season harvest). Imports had been cut back because of large stocks and good progress in the rice intensification program. Suddenly rice prices started rising, and there was no way to stop them. They reached the ceiling of Rp 50 per kg. and then doubled it in some cities, including Jakarta. Emergency imports became the stopgap. In an attempt to improve procurement for the 1973 wet season the BUUD (Village Units), presumably with greater concern for farmer welfare, were given a role. But their overnight role created by the central government had the unmistakable scent of authoritarianism, and low-price procurement at gunpoint quickly replaced incentives.

The ultimate interactions among stability as an objective, stability as a constraint, and the nature of how crucial the rice ration and urban rice prices are for the rice logistics agency are recurring themes in Indonesia's history. A broad view of whose welfare counts depends precariously on a stability that has been repeatedly snatched away. It is almost as if the

[1] The delays were in the Ministry of Finance and the Central Bank. Neither agency appreciated the critical timing involved and BULOG did not push its case hard enough.

gods will not permit that last year of good weather, more time for policies to remain uneroded until they work, and for events to move at a pace that can be judged and evaluated. It is this perspective that raises, rightly or wrongly, the spectre of historical determinism.

V. EVALUATION OF MODERN RICE POLICY

Impact on the Rice Economy

It is very easy to lose sight of the real economy when talking about policy, and it is especially easy to lose sight of trends in rice production and consumption when rice policy is so heavily oriented toward price stability. A proximate evaluation is made merely by looking at rice prices, but clearly the production and consumption interactions that determine rice prices are the important variables in the long-run.[1]

Under the influence of generally good weather, much improved availability of inputs under the BIMAS program, and profitable prices for output, rice production rose dramatically between 1967 and 1971, from 9.05 million tons of milled rice to 12.77 million tons, an increase of 41 percent.[2] This should be compared with the mere 3 percent increase from 1960 to 1967.

Even more remarkable is that net supplies available for consumption increased more rapidly than production during this period, from 8.86 million tons in 1967 to 12.75 million tons in 1971, because of increased imports. The recovery in per capita consumption levels has been especially dramatic, with levels from 1969 forward exceeding any previous level in Indonesia's history. Clearly, the rice policy was successful in these gross terms--increased production and increased consumption. The increased consumption especially reflected higher per capita incomes as the deterioration of the economy was repaired, new investment started to flow, and stability seemed assured. The pronounced preference of the great majority of Indonesia's population for rice as the basic foodstuff, when it can afford it, was emphatically demonstrated in the 1967 to 1971 period.

[1]A further reason for evaluating policy success and failure on the basis of prices is that these are promptly reported and fairly accurate. Production statistics take years to report and are of limited accuracy. Consumption is determined from production statistics, imports, and what little is known of stock changes.

[2]A small part of this increase, approximately the difference between 12.5 and 12.8 million tons, is accounted for by improved statistics.

The 32 percent increase in per capita consumption of rice during this period did not stem entirely from increased incomes, however. While urban rice prices were being carefully stabilized below the Rp 50 per kg. ceiling throughout Indonesia (for part of this time this ceiling price was higher than the world market price), the prices of other commodities, both the directly competing foodstuffs such as maize, cassava, sweet potatoes, soybeans, and peanuts, and other nonfood items in the average consumer's budget, were still increasing. Especially over the four years from early 1968 to the end of 1971 rice became a significantly cheaper food, and further substitution into rice was made in the light of fairly substantial own- and cross-price elasticities.[1]

By mid-1971 it was possible to suggest that the government's new rice policy had been a major success:

> The price policy that has been part cause and part effect of this effort has emphasized stabilization around an equilibrium price level, not support above it or control below it. But the extremely wide spatial and temporal price variations that prevailed in Indonesia prior to the present policy gave scope for both price support and price control. The government, by breaking down barriers to trade, building infrastructure, encouraging the private trade, and utilizing a government agency to enforce reasonable seasonal price limits, was able to provide improved price incentives to farmers and better price protection to consumers. Farmers responded by using more inputs and producing (and consuming) more rice. Consumers reacted, through higher incomes and better relative prices, by consuming more rice. The stabilization policy has apparently had real welfare significance for a large proportion of the population.[2]

But even in 1971 the impact of the lower real price of rice on incentives for the farmer was an issue. It was pointed out that continued subsidies on inputs, especially fertilizer, would leave the farmer's benefit/cost calculations unchanged:

> But it is total real income that the farmer is ultimately after, not a benefit/cost ratio, and here the cost reducing technology is crucial. Even lower prices can lead to higher

[1]See Table 3 for estimates of magnitudes of some of these elasticities, and Timmer (27,29) for further discussion of trends in rice consumption and their causes.

[2]Afiff and Timmer (1, p. 148).

> profits if the average costs of production fall fast enough. And this is the ultimate promise of the miracle seeds. If this strategy could be successfully implemented, it would provide progressively cheaper rice as agriculture's contribution to development. Achieving this agriculture-to-other-sectors transfer seems to be a critical factor in achieving self-sustaining economic progress. Whether it is too soon for Indonesia's rice sector to play this role is not yet known, but the answer is likely to emerge before the end of Repelita I.[1]

It has. It was too soon. Production in 1972 declined from the 1971 peak. Bad weather is obviously a major factor in this, and yet it does not totally explain why fertilizer applications stagnated at 1971 levels as well. In this, the progressively lower real prices to farmers almost certainly played a role: incentive prices work so long as they are incentives.

Efficiency of Rice Policy

Without formally implementing the political economy framework in a quantitative fashion, the discussion of efficiency of rice policy must be impressionistic at best. Still, a number of issues emerge from the previous discussion that bear directly on how well policies have worked and whether alternatives might have been feasible and desirable. In addition, earlier cross-country analysis of rice price policy raised interesting questions about Indonesia's strategy.[2]

Perhaps the most basic question about the efficiency of Indonesia's rice policy deals with how hard it would have been to break what was taken to be the binding constraint--the political importance of providing physical distribution of rice rations to a large civil service and military establishment. As noted throughout the previous discussion, this was an issue intimately connected with some of the hardest realities of the Indonesian economic and political scene: the unmanageable inflation, the need for low and stable rice prices in the city, and somewhat later, the role of the military in preventing the 1965 coup, and its subsequent role in the

[1]Afiff and Timmer (1, p. 172).

[2]See Timmer and Falcon (32).

government. To suggest that these realities could have been ignored is impossibly naive. But the critical factor seems to have been the unmanageable inflation from the printing press. Once this was controlled, and it was by 1968, the new government could have moved much more vigorously to reduce physical rations, to turn significant portions of the rice economy back to the private, monetary sector. Rice prices would probably have been somewhat less stable, it is true, and BULOG's role in market injections somewhat larger. But at least in retrospect, it would have relieved some of the pressure on BULOG supplies in 1972 and 1973, and thus farmers would probably not have been squeezed quite as hard as they were. The private market would have paid them the going price, whereas the government tried not to.

This also raises the comparative issue mentioned earlier. Even in 1970, when the evidence seems to show the farmers were receiving an incentive price relative to earlier years, Indonesian farmers received among the lowest prices for their rice, relative to the price they paid for fertilizer; only Burma and Thailand were lower. Assuming a response to fertilizer similar to that of other Southeast Asian countries and price-responsive farmers, the question was raised why self-sufficiency was not achieved by paying somewhat higher rice prices--prices that would still be only average for that part of the world.[1]

A different set of rather technical constraints seems to have prevented this strategy, apart from its obvious conflict with the objective of maintaining low prices for the cities and the weaker conflict with price stability (stability at somewhat higher prices is still stability). Self-sufficiency could not be achieved (in 1970 and 1971) by moving up the short-run supply curve because of the interaction of an internal and

[1]Details of the analysis of covariance estimates of the elasticity of rice production with respect to fertilizer (and area), indirect evidence on price responsiveness, and a preliminary discussion of Indonesian self-sufficiency, are contained in Timmer and Falcon (32).

an external constraint. The external constraint was the availability of very low-priced rice in Southeast Asia. Quotations out of Singapore, Rangoon, and Bangkok ranged as low as $75 per ton, which compared with the ex-mill floor price of about $95 per ton at the prevailing exchange rate. Even though all rice imports were handled by BULOG on government account, this cheap rice served as an effective constraint on how high prices could be within Indonesia. It has been said that "God intended Indonesia for free trade."[1] Thousands of miles of unsupervised coastline and customs officials who are frequently willing to look the other way for a price mean the smuggling potential is so great that the internal price of rice cannot be much higher, after allowing for transportation and risks, than the prevailing prices for low quality rice in nearby markets. Although this is set forth here as an external constraint, the Japanese experience indicates that a sufficiently vigorous and honest customs service could break the constraint. In this sense, perhaps, it is an internal constraint due to the general administrative efficacy of the Indonesian civil service.

The more narrow internal constraint preventing higher prices to farmers is also administrative. BULOG, after very serious administrative difficulties in 1969 in implementing a rather vague incentive price program, was in no position in 1970 or even 1971 to defend a floor price higher than the already indicated Rp 13.2 per kg. of village dry stalk paddy (or Rp 36 per kg. of milled rice at the mill). Complaints were heard during these two years of prices below the floor, and although the evidence on average prices for stalk paddy shows a dramatic improvement over 1969 (see below), there clearly were specific instances in most of the surplus areas where prices were too low. BULOG had a hard enough time getting

[1] I have lost the source of this quote. If any reader can supply it, I would be most appreciative.

switched around from its historic goal of a quantity target at the lowest possible prices to a price target at whatever quantities resulted. An inevitable tendency resulted for local agents to sit and wait for rice to come to them at the floor price. Much more effort was needed to fully implement the existing policy, an effort that was not completely forthcoming despite considerable pressure. BULOG did in fact spend considerable energies in upgrading its staff and many observers felt it was the strongest government agency administratively. But the interaction of external prices and internal administrative capability ruled out higher prices as a strategy for self-sufficiency.

One last issue is important in the discussion of the efficiency of Indonesian rice policy. This is the knowledge base on which such policy is formulated. In 1971 it was noted that "there is not a single aspect of the Indonesian rice economy that does not need substantial research."[1] Eight major areas of research were outlined as pressing. None of them has received adequate attention in the interim. The virtual vacuum of reliable quantitative data and analysis leading to a meaningful understanding of the structure of the Indonesian rice economy and especially of probable quantitative responses of producers, traders, and consumers to changes in rice policy serves as a very severe constraint on almost any policy change. But the significance is even greater than providing a rationale for the status quo. The lack of knowledge about probable responses from the private sector makes government decision-makers reluctant to trust the private sector at all. In other words, in a crunch, when change is inevitable, the government response is more likely to be of a "command-type" than an "incentive-type" just because of uncertainty. It is safer to order the farmers to deliver rice than to trust the market. In the long-run this may be the greatest

[1] Afiff and Timmer (1, p. 152).

inefficiency of all.

The Welfare Impact of Rice Policy

If welfare could be measured simply by how much rice is consumed per capita, the judgement would be relatively straightforward. Indonesians are consuming more rice than ever before. But this simple measure, while appealing and not without some merit, misses at least two major aspects of welfare, even within the narrow context of the food input to the total welfare function. First, Indonesians consume other foods than rice, and second, not unrelated, an average consumption figure masks a tremendously wide variation in individual consumption levels.

First, Table 4 summarizes some recent trends in consumption of the six basic foodstuffs. Although rice consumption increased at an annual rate of 2.8 percent over the 1968 to 1971 period, when rice policy was most effective, the other major carbohydrate sources fell behind. Maize consumption dropped by over 3 percent per year, cassava by more than 4 percent, sweet potatoes by nearly 5 percent. The protein sources fared slightly better with the decline in peanut consumption about offset by the increase in soybean intake. The total intake of the two was little changed. The startling figures, however, are the small increase in the total rice-equivalent intake, comparable to calories, and the 3.3 percent per year decline in food intake excluding rice. How, in the face of rapidly rising per capita incomes--estimated at 5 percent per year for the period--could calorie consumption increase so little from what were already among the world's lowest levels?[1] And how could these trends be maintained, even worsened, when the comparison is with 1973?[2]

The first answer, certainly the most appealing from a welfare point of view, is that the data are simply wrong. All the effort and prestige

[1]For a further discussion of Indonesia's calorie and protein standing see the note by Colin Clark (5, pp. 98-103).

[2]A comparison with 1972 is unfair because of the drought.

Table 4.--Recent Trends in Per Capita Food Consumption[a]

Foodstuff[b]	(Kilograms per capita per year) 1968	1969	1970	1971	1972	1973	Average Annual % Inc./(Dec.) 1968-71	1968-72	1968-73
Rice	104.2	106.7	115.1	113.2	107.3	119.6	2.80	0.74	2.80
Maize	23.3	22.8	20.5	21.2	18.6	19.3	(3.10)	(5.48)	(3.70)
Cassava	28.1	26.7	24.7	24.6	22.6	20.2	(4.34)	(5.30)	(6.39)
Sweet Potatoes	5.2	5.0	4.5	4.5	3.9	4.1	(4.71)	(6.94)	(4.64)
Peanuts	3.7	3.4	3.7	3.4	3.2	3.4	(2.78)	(3.56)	(1.68)
Soybeans	3.3	3.1	3.8	3.8	2.7	3.0	4.80	2.90	(1.89)
Total Rice-Equivalent Weight	167.8	167.7	172.3	170.7	159.3	169.6	0.57	(1.29)	0.21
Total Excluding Rice	63.6	61.0	57.2	57.5	52.0	50.0	(3.31)	(4.91)	(4.70)

[a]In rice equivalents using the following FAO conversion factors:

Rice	1.000
Maize	0.989
Cassava	0.303
Sweet Potatoes	0.269
Soybeans	0.335
Peanuts	1.517

[b]Consumption assumed to be 94% of production for rice, maize, peanuts and soybeans, and 90% of production for cassava and sweet potatoes. Imports of rice are added to consumption.

Source: (25), July 1974.

Table 5.--Rice Harvest Prices in Three Provinces of Java, 1968-1971 (Rupiahs per kilogram)

Year	West Java[a]	Central Java[a]	East Java[a]	Non-food Price Index
1968	20.14	16.84	16.67	1.000
1969	12.11	11.50	10.22	1.383
% change	-29.9%	-31.7%	-38.7%	38.3%
1970	17.95	16.10	14.86	1.636
% change	48.2	40.0	45.4	18.3
1971	16.82	16.37	15.38	1.731
% change	-6.3	1.7	3.5	5.9

Source: BPS for harvest prices; Timmer (29) for construction of Non-food Price Index.

[a]Prices reported are for Cere No. 2 dry stalk paddy during the heavy harvest months of April and July.

associated with the rice intensification effort simply meant that crop reporting of the other crops suffered badly with serious under-reporting of yields and area.

Bad statistics may be part of the answer, but the trend seems too general to brush off in this fashion. Some additional evidence suggests an alternative scenario. The critical element is what happened to rural incomes during this period. Table 5 presents some data with which to form a rough judgement.

The table demonstrates that 1968 had been a good year for farmers, but 1969 caught them in a cruel squeeze. Not only did average paddy prices decline by about 30 percent, but the prices of non-food items rose by 38.3 percent, for a total adverse move in the terms of trade of more than 60 percent. The incentive price policy implemented in 1970 reversed this trend with farmers regaining about 20-25 percent or about a third of their loss from 1968. However, 1971 started an erosion again which apparently continued in 1972, to be reversed only in 1973 and 1974. But real farm prices were clearly lower in 1971 than in 1968, and the 20 percent increase in production was not enough to prevent a fairly serious decline in real incomes of rice farmers. Since rural incomes, especially on Java, are so heavily influenced by incomes from rice farming, the conclusion must be that rural incomes probably declined in the 1968-1971 period despite an apparent 5 percent per year increase in per capita incomes for the Indonesian population as a whole.

This could happen only if there was a fairly dramatic shift in income distribution away from the rural sector and toward the urban (and manufacturing, mining, and oil) sector. With this happening it is possible to reconcile declining calorie consumption in the face of rising incomes.

In fact, the lower half or two-thirds of the population probably had decreasing real incomes during this period, and the lower rice prices did not offset the higher non-rice prices sufficiently to maintain consumption levels of the non-rice foodstuffs.[1] The inescapable conclusion, if the statistics are approximately correct, is that a minority of basically urban consumers were considerably better off than during the mid-sixties but that a good part of the improvement was at the expense of the rural, especially farm, population. The average figures of 5 percent annual per capita growth in real income and greater than that increases in rice consumption mask a very serious mal-distribution of income that was getting much worse rather than better. It is too early to judge fully the impact of the events of 1973 and 1974.

[1]Retail (money) rice prices in the rural markets of Java actually rose 2.4 percent from 1968 to 1971 while a weighted index of the other five basic foodstuffs rose by 14.3 percent.

VI. PROGNOSIS

The Past as Future

The maxim that those who ignore history are doomed to relive it conveys the obvious lession of Indonesia's several centuries' experience with rice and rice policy. BULOG's (and its predecessors') "quarter century struggle" was only part of the past. Despair about the future comes easily when the mistakes of the past are so often repeated. But were they mistakes, or were they the inevitable consequences of forces so great that policy-makers in the government were successively overrun by the same rolling stone? This deterministic view holds that the forces were inevitabl and that the government was helpless to prevent each rice crisis.

The historical evidence permits a much more hopeful view of the future. This requires assigning culpability for past crises, calling mistakes mistakes, and acting on the lessons of history. This is the only hope that the patterns of the past will not recur.

Evolution of Constraints

One of the major lessons to be learned from this perspective on Indonesia's rice policy is that all constraints have their price, at least in the long-run. The problem is how to translate day-to-day concerns and ad hoc policies necessitated by very real and binding short-run constraints into a policy set that is consciously designed to break these constraints in the longer-run. It should be apparent that as long as all the old constraints remain that prompted the wrong response time after time, those responses will be forthcoming in the future. The circle is obviously vicious, and the problem is how to break out of it. In the middle of a crisis is the wrong time to try although even in a short-run crisis there

are policies that will make things worse rather than better. Preventing interregional rice trade and rice procurement at gunpoint are cases in point.[1]

In retrospect it appears that a golden opportunity to make a move against the recurring constraints of fixed distribution rations and administrative competence was missed in the stability between early 1970 and mid-1972. BULOG should have been much more aggressive about defending the floor price and the Finance Ministry less concerned about the deficits incurred in doing so. By the 1972 harvest it would have been possible to raise the buying price by perhaps 20 percent.[2] Domestic procurement would have been much improved and the rice crisis late in 1972 and early 1973 much more manageable. An additional 300,000 tons from domestic sources might have meant the difference between completely losing control and being able to follow a rising world market price slowly and with adequate explanation to the public.

It was also possible to reduce and gradually eliminate rice rations for the civil service. These and equivalent ones for the military establishment have often been the driving force behind "command-type" efforts to force farmers to give up their rice at low prices. The short-run and long-run effects of such efforts are deleterious, but it will probably be necessary to remove the need before the response will go away. The stability of 1970-1972 provided an excellent opportunity to make real progress on this front, but a combination of factors prevented any action.[3] This too must await the next period of calm.

The second front where future government policy can have a significant impact on the structure of constraints it will face in the longer-run involves administrative competence. Government agencies do not change

[1]Power, as Chairman Mao says, comes out of the barrel of a gun. But rice does not.

[2]In fact, it was lowered by perhaps 10-15 percent with the new quality standards and a shift from a price quoted f.o.b. rice mill to one c.i.f. BULOG warehouse.

[3]One of the most ironic factors, again in retrospect, was BULOG's fear of massive surpluses, unfortunately a fear partly instilled by the author. Without the monthly physical rice rations, there would be no way to dispose of ageing stocks. Of course, maintaining some monthly turnover in rice stocks is important in the tropics, but the provisions for the military establishment would easily serve this purpose. In addition it might not be in the best interests of farmers or rice traders to have local military commanders responsible for their own provisioning.

overnight, and the pegawi, or civil servant, problem has been a major obstacle to rapid modernization of Indonesia's economy for the past two decades. It has become critical in the past five years, however, as the real possibilities within Indonesia's potential grasp loomed enticingly clearer. But redundant and indeed counter-productive government employees cannot be laid off until reasonable prospects of alternative employment are available, and here the future is not promising. But this does not rule out progress on particular fronts, and BULOG must be prepared physically and in mental outlook to implement a meaningful floor price for farmers, possibly in conjunction with the BUUD.

A third area where progress is needed and feasible is the rice intensification program. It will not go very far in the face of adverse price relationships, but incentive prices are sure to meet a much more elastic response if the inputs are readily available, well adapted to local conditions, and the farmers knowledgeable and skilled in their application. This is a large order--practically the definition of a modern agriculture. But it is a direction Indonesia must pursue vigorously. A domestic surplus of rice at incentive prices would break constraints on Indonesia's rice policies faster than anything else.

Evolution of Policy

A rural-oriented rice policy is the only way Indonesia will achieve self-sufficiency in rice. Other options are open, however. Indonesia's oil revenues are now more than sufficient to provide the massive rice imports needed to pursue a low price, urban consumer-oriented rice policy, i.e., a continuation of history. Recent scarcities in world markets have eased, and once again the pressure is off. Which direction will the government go?

Each reader is free to provide his own interpretation of how objectives and constraints will interact in the future to determine directions and policies. My own view, from the outside, is that inner Indonesia's only hope for the future is to opt for a rural strategy based on a renewal of Javanese village life. Industrialization can be an answer for only an elite handful relative to the tens of millions who seek jobs that will provide a better living. Agriculture and the rural village can provide this if they are provided encouragement, resources, and a thriving economy in the surrounding countryside.

Most important for this strategy, of course, is a prosperous rice economy. Here the interaction of objectives, constraints, and policies comes full circle, as incentive prices help break the constraints that have thwarted development for so long. This change in direction will not be easy. Merely announcing new prices and cutting rations will not produce success. It is the frame of mind that generated the old policies that must go, not just the policies themselves.

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