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YUJIRO HAYAMI*

JAPAN'S RICE POLICY IN HISTORICAL PERSPECTIVE†

Rice is by far the most important agricultural product in Japan. At the beginning of modern economic growth a century ago, rice represented 60 percent of total agricultural production; currently it represents 40 percent.

Rice is no less important as a consumption good. Rice was the source of more than 60 percent of the total caloric intake of the Japanese before World War II; only in the late 1960s did it drop below 40 percent. As shown in Table 1, rice purchases made up nearly 30 percent of the consumption expenditures of urban blue collar workers until 1920 and did not fall below 10 percent until 1960 despite rapid growth in per capita income.

Given the predominance of rice in both agricultural production and consumption, government policy for rice has had critical implications for national economic development. This essay aims to identify the basic objectives and the constraints of rice policy in relation to long-term economic growth in modern Japan since the Meiji Restoration of 1868.[1] The major focus is on the process by which economic and political forces induced changes in rice policy. Study of the interaction of rice policy and economic growth in the history of Japan should provide information relevant to the development strategy of other countries in Asia that are now exploring the production potentials of rice and other food cereals and their implications for overall economic development.

POLICY OBJECTIVES AND CONSTRAINTS: A HYPOTHESIS

In the course of modern economic growth, the goals and constraints of rice policy in Japan have undergone basic changes. In this section the major objectives of rice policy in different stages of economic development are identified, and a hypothesis is presented on the economic and political forces that underlay the basic changes in these objectives.

Redirection of Rice Policy

Japan's rice policy in recent years has been characterized by a high level of protection of domestic rice producers effected through import controls and price

* The author is Agricultural Economist at the International Rice Research Institute (IRRI).

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[1] For a review of the history of rice policy in relation to economic growth, see Mochida (*21*, *22*). For factual descriptions of rice policies, see Takekazu Ogura (*25*, pp. 149–210).

TABLE 1.—SHARES OF THE EXPENDITURES FOR FOOD AND RICE IN TOTAL CONSUMPTION EXPENDITURE BY URBAN WORKER HOUSEHOLDS*

	Shares of expenditure	
	All food (*percent*)	Rice (*percent*)
Blue collar workers		
Around 1897	54	32
1919	44	27
1926–27	33	16
1931–33	27	11
1936–38	33	15
White collar workers		
1920	37	18
1926–27	26	11
1931–33	24	8
1936–38	28	11
All urban workers[a]		
1953	45.0	12.9
1954	45.4	12.7
1955	44.5	12.4
1956	42.9	11.9
1957	41.9	11.8
1958	41.2	11.1
1959	39.8	10.3
1960	38.8	9.5
1961	37.7	8.2
1962	36.7	7.0
1963	36.4	6.7
1964	35.7	6.0
1965	36.3	6.2
1966	35.1	5.6
1967	34.5	5.1
1968	33.7	4.9
1969	32.8	4.3
1970	32.4	3.8
1971	31.6	3.5

* Data from Office of the Prime Minister, Bureau of Statistics, *Toshi Kakei Chosa Hokoku* (Report on the Survey of Urban Household Expenditure), (Tokyo, various issues); and Keizo Mochida, "Shokuryo Seisaku no Seiritsu Katei" (Process of the Formation of Food Policy), *Nogyo Sogo Kenyu*, (Tokyo, April 1964).

[a] Averages for cities with populations of more than 50,000.

supports. Continuous hikes in the government's procurement price resulted in a price of domestic rice that was more than double the import price in the late 1960s. Such support was a heavy burden on the national budget. As indicated in Table 2, by 1968 the government expenditure for rice support had reached 278 billion yen (Y), equivalent to about U.S.$1 billion (see Table 2).

Although recent rice policy has been marked by the high level of protection of rice farmers at the expense of urban consumers and taxpayers, this policy is exceptional in the economic history of Japan since the Meiji Restoration. The significance of the current rice policy is clearly indicated by comparison with the price of rice since 1880, as shown in Chart 1. The undeflated price shows a clear

TABLE 2.—DEFICIT FROM THE FOOD CONTROL PROGRAM IN RELATION TO THE TOTAL NATIONAL BUDGET AND THE BUDGET FOR AGRICULTURE AND FORESTRY OF THE CENTRAL GOVERNMENT, 1951–74*[a]

Fiscal year	Balance of the food control special account (*billion yen*)	Percent ratio of deficit of the food control account to	
		Agriculture and forestry budget	Total budget
1951	3.8	−3.6	−0.5
1952	−14.0	9.7	1.5
1953	−20.6	12.1	2.0
1954	−13.0	11.6	1.3
1955	−0.3	0.3	0.0
1956	−16.0	17.5	1.5
1957	−6.7	5.5	0.6
1958	−2.1	2.0	0.2
1959	−10.2	8.8	0.7
1960	−28.5	17.1	1.6
1961	−58.6	25.5	2.8
1962	−62.5	24.4	2.4
1963	−78.6	26.3	2.6
1964	−126.9	36.4	3.8
1965	−128.1	31.6	3.3
1966	−213.9	38.5	4.8
1967	−248.8	40.3	4.8
1968	−278.2	40.6	4.7
1969	−344.1	41.6	5.0
	(356.6)	(43.1)	(5.1)
1970	−346.2	34.9	4.2
	(456.4)	(46.0)	(5.6)
1971	−304.0	26.5	3.2
	(476.5)	(41.6)	(4.9)
1972	−349.1	24.8	2.9
	(530.3)	(37.7)	(4.4)
1973	−635.2	34.0	4.2
	(816.1)	(43.6)	(5.3)
1974	−598.2	32.7	3.5
	(713.2)	(39.0)	(4.2)

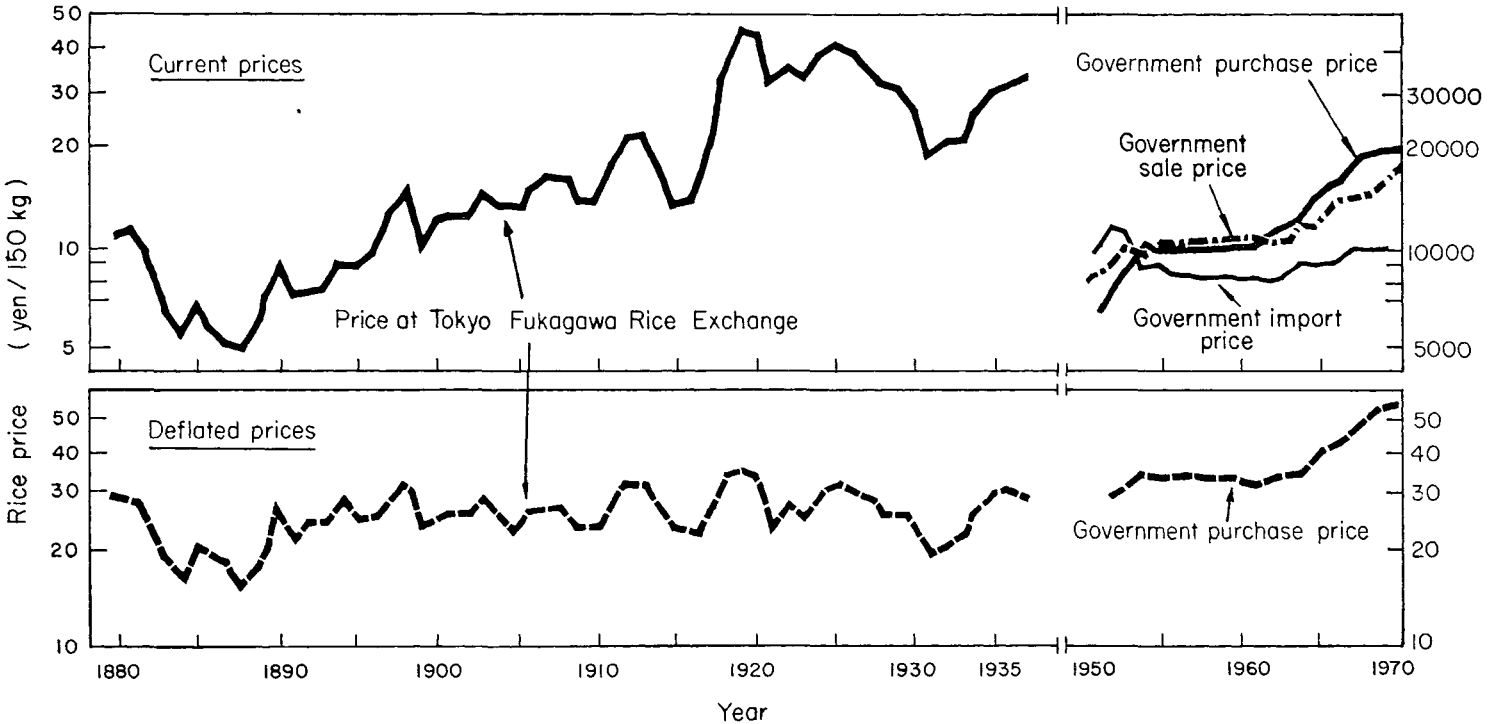
* Data prepared by the Research Section, Food Agency and the Budget Section, Office of the Prime Minister, Ministry of Agriculture and Forestry, various dates.

[a] Figures in parentheses are the budget of food control plus the budget for retirement and diversion of paddy field area.

upward trend with big jumps during the two world wars. But the price of rice deflated by the general price index remained at about the same level from the early Meiji period until 1960, although this index was subject to considerable fluctuations due to business cycles.[2] In relation to the long-term trend in the deflated price of rice, the rapid rise in rice prices after 1960 is therefore an entirely new phenomena.

[2] The most pronounced fluctuations were downswings in the mid-1880s due to the Matsukata Deflation, and in the early 1930s due to the World Depression and an upswing in the boom of World War I. The Matsukata Deflation was named after Finance Minister Matsukata, who executed the deflation policy by consolidating paper currencies in order to establish the silver standard.

CHART 1.—CHANGES IN RICE PRICES IN JAPAN, BOTH CURRENT AND DEFLATED BY THE GENERAL PRICE INDEX, 1880–1937 AND 1951–70*
(1934–36 = 100; log-scale in brown rice term)



* Data from B. F. Johnston, M. Hosoda, and Y. Kusumi, *Japanese Food Management in World War II* (Stanford, 1953); and T. Ogura, ed., *Agricultural Development in Modern Japan* (Tokyo, 1963).

Determinants of Rice Policy Before 1960

A relevant question is whether the real price of rice remainced stable before 1960 by chance or whether this stability was the result of a deliberate policy. An answer to this question requires an understanding of the role of rice as a critical wage good in Japan, especially in the early stage of economic development. Industrialization and economic growth are conditioned by the availability of agricultural surpluses, especially of basic food staples which provide wage goods for industrial workers.[8] In the classical model of economic development from David Ricardo (*28*) to Arthur Lewis (*20*) and J. C. H. Fei and Gustav Ranis (*2*), returns to capital (and hence capital formation and economic growth) critically depend on the elastic supply of labor to industry, which in turn depends on the elastic supply of food to the urban sector. If food supplies have to be imported, less foreign exchange is available for the import of capital goods and technical skills.

Given the importance of rice in working class consumption patterns, it was critical for the industrial development of Japan that cheap rice be supplied to industrial workers to keep their living costs and wages low. Inexpensive rice was especially important in the earlier stages of industrialization when labor-intensive, light industries (such as textiles) predominated, particularly in the manufacturing of export goods.

When the door was opened to foreign countries shortly before the Meiji Restoration, Japan was under real danger of colonization by the western powers. Under these circumstances it was natural that a countervailing nationalism became the major determinant of government policies. Building a military force that could rival those of the western nations was given top priority. Moreover, the Meiji leaders recognized that western military superiority was based on industrial productivity. Industrial development thus became a national goal. The slogan was to "build a wealthy nation and strong army" (*Fukoku Kyohei*) and to "develop industries and promote enterprises" (*Shokusan Kogyo*). It is plausible then that policy was designed to secure rice supplies which would prevent increases in the cost of living and in the wage rates of urban workers.

In terms of the industrial development goal, the cheaper the rice, the better. However, there was a limit. If rice prices fell too low, social instability in the rural sector might have resulted and the farmers' incentive to maintain rice production might have been lost. A decline in the production of rice would have created a drain on foreign exchange, and foreign exchange was also critical for industrial development.

It therefore seems reasonable to hypothesize that from the beginning of the Meiji period to 1960, institutions and policies were, intentionally or unintentionally, designed to stabilize the price of rice relative to the general price index within a fairly narrow range. Rice prices were prevented from rising above an upper boundary in order to facilitate industrial development by keeping the cost of the critical wage good below a tolerable level in an economy in which labor-intensive industries predominated. The policy of keeping rice prices above a lower boundary resulted from the desire to prevent the majority of the population's income from

[8] Surplus is defined here as the difference between production and consumption by producers.

declining below a subsistence level and to maintain a production incentive for rice farmers.

Determinants of Rice Policy After 1960

As noted above, during the 1960s the real price of rice rose rapidly and exceeded the previous upper limit of the range of stable prices. This change resulted from the government's decision to support the income of rice producers. As stated in the Agricultural Basic Law of 1961, the major objective of agricultural policy in the 1960s was to attain a level of farmer income comparable to that of urban workers.[4] Government support of rice prices was a means of achieving this goal when the growth of agricultural output lagged behind that of industrial output.

Several factors entered into the decision to change the major goal of rice policy in Japan from the traditional one of holding down the cost of the principal wage good for urban workers to that of supporting farm prices and income. Two obvious constraints on a price support policy were the government budget and the resistance of the urban sector. In spite of these constraints, economic forces, especially the declining importance of rice as a wage good, led to the adoption of the support policy.

An unprecedented spurt of industrial development after the mid-1950s transformed the industrial structure of Japan, and urban wages rose dramatically. The strength of Japanese industry in international competition no longer rested on cheap labor. In response to the rise in wages and income, the share of rice in the urban workers' consumption expenditure declined (see Table 1). The importance of rice as a wage good, once critical for industrial development, was drastically reduced. The Japanese economy reached a stage in which a rise in rice prices was tolerable. At the same time, the rapid increase in government revenue during the rapid economic growth of the 1960s lifted the budgetary constraint on supporting rice prices.

Continuous hikes of rice prices during the 1960s were the result of extremely strong political pressure from farmers demanding equality of incomes and of standards of living with those of urban workers. It is, however, inconceivable that the political pressure from farm organizations could have brought about an increase in rice prices capable of pushing domestic prices several times above international prices if rice had remained the critical wage good as it was before 1960.

RICE POLICY FOR INDUSTRIAL DEVELOPMENT

Institutions for Delivering a Marketable Surplus

The policy that contributed most to the increase in the marketable surplus of rice in the early Meiji period was the Land Tax Revision (1873–76).[5] The revision was aimed at securing stable government revenue by commutating the feudal tax in kind, which was levied in proportion to quantities harvested, into payments in cash based on a fixed value of the land. Farmers and landlords were

[4] "It belongs to the responsibility of the nation . . . to enable the people engaged in agriculture to spend a healthy and cultural life in equilibrium with the people in other sectors . . . ." Preface to the *Nogyo Kihon Ho* (Agricultural Basic Law), 1961.

[5] The tax revision on arable land was largely completed by 1873, but was not completed on forest and wild fields until 1881.

thus compelled to market nearly one-quarter of the rice produced to pay the new land tax.

The Land Tax Revision also accelerated the concentration of land ownership in the hands of landlords. Because the tax was a fixed amount, small farmers often had to borrow money from wealthier farmers or landlords in years of bad harvest or low rice prices. As a consequence, many of them lost land through foreclosure. This process was greatly accelerated during the Matsukata Deflation in the mid-1880s. The area owned by landlords rose from less than 30 percent of total arable land at the time of the survey for the Land Tax Revision, to 40 percent in 1892, and to nearly 50 percent by 1930.

Because rent for paddy fields was paid in kind, roughly 50 percent of the harvest, the accumulation of land titles by landlords contributed to an increase in the marketable rice surplus. Rice exports in the early Meiji period were thus encouraged by heavy land taxes and rents.[6]

A more positive means to increase the marketable surplus of rice was to increase productivity. Shortly after the Meiji Restoration the government tried to transform Japanese agriculture by importing western farm machinery, crops, and livestock with Anglo-American farming techniques. This policy of direct "technology borrowing" proved unsuccessful because of differences in both climatic and economic conditions. During the 1880s the government quickly shifted to a strategy of agricultural development that emphasized raising yields of traditional food staples and, above all, of rice.[7]

To this end the government attempted to develop a labor-intensive and land-saving technology by tailoring Japan's indigenous techniques on the basis of modern agricultural sciences developed in Germany (soil science and agricultural chemistry of the Leipzig tradition). Establishment of the Itinerant Instructor System (1885) and of the Experiment Station for Staple Cereals (1886), which grew into a national system of agricultural experiment stations, was part of this strategy. Also, the government encouraged farmer organizations for agricultural improvements such as *Nodankai* (society for discussing farming matters) and *Hinshukokankai* (society for exchanging seeds) as media for improving and propagating better techniques.

These measures were partly aimed at counteracting an appeal for the reduction of the newly established land tax. The *Konoronsaku* (Treatise on the Strategy of Agricultural Development) was drafted in 1891 by the Agricultural Science Association (*Nogakukai*). In this treatise the association rejected the argument for reduction of the land tax on the basis that it would contribute only to the welfare of landlords and give no benefit to tenant farmers. The association advocated "more positive measures to develop agriculture such as agricultural schools, experiment stations, itinerant lectures, and agricultural societies" to reduce the burden of farmers (*9*, pp. 1765–79). The establishment of the National Agricultural

[6] According to Max Fesca, a German soil scientist employed by the Meiji Government, "The people of the lower class ate mainly a mixture of rice and barley prepared in the ratio of 1 to 2, or a porridge of millet and rice or of millet and barley, and, as a side dish, ate dried strips of radishes or vegetables of the season; they took almost no fish, even dried ones" (*25*, p. 182). Japan was a net exporter of rice until the Sino-Japanese War (1894–95).

[7] See Chapter 7 of Hayami and Ruttan (*4*) and Ogura (*25*) for the policies for increasing productivity and output of rice. For more detailed information, see Nogyo Hattatsushi (*24*).

Experiment Station system in 1893 represents a direct response of the government to the proposal by the association.

During the Meiji period (1868–1911), landlords in Japan played key roles in raising agricultural productivity by acting as village leaders promoting the introduction of new technology and improvement of infrastructure, such as irrigation. The reforms of the Meiji Restoration removed feudal constraints on their economic activities. In particular, the Land Tax Revision increased their incentive to raise farm productivity.

The landlords not only took the initiative in organizing agricultural associations such as Nodankai and Hinshukokankai as the media for introducing new agricultural technology. They also assumed leadership in the construction of infrastructure in the form of irrigation and drainage works. Experiment stations and extension services were also consistent with the interests of innovative landlords, and they exercised their political influence in support of them.

As a result of these private and public efforts, rice production gradually increased. But it failed to keep up with growing demand during the initial spurt of industrialization dating from the recovery of the Matsukata Deflation to the Sino-Japanese War. Japan changed from net exporter to importer of rice. This change raised public concern about foreign exchange and national security. The government, in an effort to counteract the increase in rice imports by encouraging domestic production of rice, established the National Agricultural Experiment Stations (1896), the Law of State Subsidy for Prefectural Agricultural Experiment Stations (1899), and the Arable Land Replotment Law (1899).

By 1900 the efforts to develop technology to raise yield per hectare by combining indigenous techniques and modern science were successful. A unique technology was established called *Meiji Noho* (Meiji agricultural methods) which was based primarily on seed improvement and heavier fertilizer application with extremely labor-intensive land preparation, weed and pest control, and water management. Because of the development and propagation of Meiji Noho, Japan was able to increase domestic rice supplies during the first two decades of extremely rapid industrialization and per capita income growth, without raising the price of rice relative to the general price level.

From Tariff Protection to Imperial Self-sufficiency

When Japan became a net importer of rice, arguments for tariff protection of rice began to be raised. These arguments were based on foreign exchange and national security considerations. Appeals for protection by the landlords were channelled through the Imperial Agricultural Society, a national organization of agricultural associations. Behind their demand for a rice tariff was a shift in the major interest of the landlord class.

As industry developed rapidly, the opportunities for nonfarm investments increased. Many landlords found it more profitable to invest their revenue in nonfarm businesses rather than to reinvest in agriculture. Therefore, a shift from "innovative landlords" to "parasitic landlords" progressed in the late Meiji era and the Taisho era (1912–25).[8]

[8] For a description of this process see Seiichi Tobata, contained in (*21*, pp. 561–602).

Landlords began to be more concerned with marketing the rice they collected from tenants than with increasing agricultural productivity. Concurrently, the landlords' major target for political influence shifted from measures to increase agricultural productivity to agricultural protectionism, including tariffs and price supports on farm products.

In the first year of the Russo-Japanese War (1904–05) a tariff of 15 percent ad valorem was imposed on rice imports. This tariff was motivated primarily by a desire to increase customs revenue to finance the war. But it was also intended to appease landlords who accepted the increase in land tax. The tariff was expected to be terminated with ceasefire but the landed interests lobbied strongly. In 1906 they succeeded in passing a specific duty of Y0.64 per 60 kilograms.

Subsequently, the rice tariff became a major public controversy, similar to those over the British corn laws and the German grain tariffs.[9] The two opposing sides were represented by Jikei Yokoi of the University of Tokyo and Tokuzo Fukuda of the Tokyo College of Commerce (Hitotsubashi University). Yokoi, the leader of agricultural fundamentalism, argued for the tariff on grounds of national security (preservation of agriculture as a source of strong soldiers), balance-of-payments considerations, and balanced growth of agriculture and industry. Fukuda retaliated with the economic doctrine of the Manchester School in favor of free trade and industrial growth.

The controversy heated in the arena of the National Diet (legislature). Of the two major parties, Seiyukai represented the landed interests and Minseito the manufacturers and exporters. The Imperial Agricultural Society lobbied for the landlords and the Tokyo Chamber of Commerce for the manufacturers and merchants.

The opposition to rice tariffs from the industrial and commercial sectors was based on the recognition that rice price increases had adverse effects on industrial development by raising the cost of living and the wage rate of urban workers. Yokichi Asano, a member of the Lower House of the Diet, stated in his speech opposing the rice tariff bill (*23*): "From the standpoint of consumers this is a proposal to make life more difficult... it is a proposal to punish such people as salaried workers and blue collar workers who are dependent on wage incomes.... Why should we protect the landlords of this nation at the sacrifice of the interests of traders, manufacturers, and laborers?"

In 1913 the rice tariff was set by the Diet at Y1 per 60 kilograms, which could be lowered to Y0.4 by executive order. An important qualification, which was added because of the pressure from industrial and commercial interests, was that rice imports from the overseas territories, Taiwan and Korea, were to be free of duty. This decision resolved the conflict between the policy goal of supplying cheap rice for urban workers and the constraint on foreign exchange required for rice imports by expanding the source of rice supplies from Japan proper to overseas colonies.[10]

[9] For a description of the controversy, see Mochida (*21*).

[10] However, as explained below, the policy of imperial self-sufficiency was not formally adopted until the *Kome Sodo* (Rice Riot) in 1918. According to Tobata, before the Rice Riot, ". . . development efforts in Taiwan were concentrated on sugar production and little was done in Korea. It was claimed that the development of rice production in those overseas territories should be suppressed since it fostered competition against Japanese agriculture. . . ." Hattatsushi (*24*, p. 597).

Increases in rice yield and production began to slow down in the mid-1910s. The technological potential of Meiji Noho was being exhausted as it was perfected and propagated (*5*). The agricultural experiment stations in their early days contributed to the growth of agricultural productivity by exploiting indigenous potential rather than by supplying new potential. The national experiment station gradually conducted more basic research, including original crop breeding projects at the Kinai Branch, by cross-breeding (1904) and at the Rikuu Branch by pure line selection (1905). Results of major practical significance lagged, however, for more than two decades (*24, 25*).

The exhaustion of indigenous potential and the lag in scientific research, coupled with increased demand during World War I, resulted in a serious rice shortage and high rice prices. These factors caused disruptions in urban areas and culminated in the Rice Riot in 1918, which swept over the major cities of Japan.

Japan was then faced with a choice between high rice prices, high cost of living, and high wages on the one hand and a drain on foreign exchange by large-scale rice imports on the other. The government's response was to organize the imperial self-sufficiency programs. Under the program titled *Sanmai Zoshoku Keikaku* (Rice Production Development Program), the Japanese government invested in irrigation and water control, research, and extension in order to develop and diffuse high-yielding Japanese rice varieties adapted to the local ecology of Korea and Taiwan.[11] The success of this effort created a tremendous rice surplus that flooded the Japanese market. Within 20 years, from 1915 to 1935, annual net imports of rice from Korea rose from 170,000 to 1,212,000 metric tons and annual net imports from Taiwan rose from 113,000 to 705,000 metric tons. As a result of the inflow of colonial rice, imports rose from 5 to 20 percent of domestic production.

Rice Control to Counteract Colonial Rice and the World Depression

The success of the government program in developing Korea and Taiwan as major suppliers of rice to Japan was a mixed blessing. Large-scale imports of rice, a commodity characterized by relatively inelastic demand, could be expected to lower the price and discourage rice production in Japan.

And indeed, during the 1920s, competition from colonial rice producers together with the deflationary policy of the government—a return to the gold standard at prewar parity—depressed agricultural prices and income. Then the World Depression hit Japan, resulting in a serious agricultural crisis. The government was compelled to rescue farmers by supporting rice prices.

Attempts to stabilize rice prices by government purchase, sale, and storage activities were discussed as early as 1913. In 1915 the Rice Price Adjustment Order was proclaimed, but few operations were initiated before 1920. When rice prices began to fall in the 1920s, the Imperial Agricultural Society pressed the government to adopt a rice control program, the Ever-Normal Granary Plan. This brought about the Rice Law in 1921, which empowered the government to spend up to Y2 billion to adjust rice supplies in the market by buying, selling, storing, and processing rice, by reducing or increasing import duties, and by restricting imports from foreign countries.

[11] For a description of this process, see Hayami and Ruttan (*4*, pp. 198–212).

In response to further declining rice prices, the Rice Law was amended in 1925, 1931, and 1932, raising the budget authorization finally to Y4.8 billion. In 1933 when a bumper crop caused a phenomenal surplus of rice, the Rice Law was replaced by the Rice Control Law, which authorized the government to buy and sell unlimited quantities of rice at the floor and ceiling price. The government's operations to control rice buying, selling, and storage, were also extended to colonial rice.

Government storage reached a peak of 1.4 million tons at the end of 1934. Thereafter, the relationship between demand and supply for rice changed dramatically. Heightened military involvement in China increased effective aggregate demand and expanded the demand for rice. At the same time, labor and capital were diverted from productive to military purposes. After the China Incident in 1937, the shortage of labor and material inputs, such as fertilizer, was felt keenly. Government stocks of rice decreased rapidly and were exhausted in 1939 by the severe drought which hit western Japan and Korea.

During the war the government was forced to take direct control of rice distribution, beginning with the Rice Distribution Control Act in 1939. Increasing numbers of food items were added to the list of direct control and rationing. Finally, the Food Control Act was proclaimed in 1942, the second year of the Pacific War, by which time nearly all items of food were placed under strict control of the government.[12]

RICE POLICY AND POSTWAR ECONOMIC DEVELOPMENT

The period from 1946 to 1952 was one of recovery and reconstruction. Emergency measures dominated policy through 1947, but measures to increase food production were of major concern to the Japanese government and the occupation headquarters throughout the postwar period (*18*, p. 230). Expansion of fertilizer supplies was given a high priority. Nitrogen plants that had been used to manufacture explosives were converted to the production of nitrogenous fertilizers. By 1950 consumption of fertilizers had almost reached its prewar level. Measures were also adopted to restore production of insecticides. Reclamation in 1947 of 300,000 hectares of agricultural land from military use was an important source of increased production (*18*, pp. 230–31). Government controls on food commodities were lifted one by one: potatoes in 1949, wheat in 1952, and so on. Direct controls on rice were to be lifted in April 1952, but this plan was withdrawn because of the bleak prospects for food supply during the Korean War.

The Korean War created a windfall for Japanese industry. Increases in military and civil procurement from the United States stimulated investment and improved the balance of payments. Industrial production had recovered to the prewar level by 1953 and continued to rise at a rapid pace.

The disparity in income and wages between agriculture and industry began to increase after the Korean War boom. Dissatisfied farmers demanded an increase in the government procurement price of rice. In the postwar period the political power of the landlord class was lost as a result of land reform. However, farmers' demands were channeled through the powerful national system of agricultural co-

[12] The story of Japanese food management in World War II and the years immediately after is reported by B. F. Johnston (*18*).

operative associations, consisting of more than 30,000 village associations which were organized into prefectural federations and national federations. One of these national federations, the Central Union of Agricultural Cooperatives, was in charge of political lobbying activities.

In 1946 the Supreme Command of the Allied Powers had introduced the American concept of parity prices for farm crops, essentially a device for maintaining the terms of trade for farm products as they were in an earlier period. For Japan, parity was assumed to have existed in 1934–36. Farmers expressed discontent with this device from the outset. The parity index was modified in 1952 in recognition of the lag in consumption and living standards of rural households compared with urban households and of the changes in levels of material inputs to rice production. Farmers also demanded a change in the price determination formula away from the parity index to a formula based on the cost of production. They demanded that the cost should be calculated by valuing the input of family labor using wage rates which would result in a standard of living comparable to urban workers. In short, rural-urban income parity was the target that farmers tried to achieve by group action. In 1959 it was decided that the government should consider not only the parity index but also the cost of rice production in determining the producer price of rice.

The price of rice was remarkably stable from the end of the Korean War to 1960, and the deficit in the Food Control Special Account was moderate (see Table 2). During the 1950s exports from Japan were still dominated by the products of labor-intensive, light industries such as textiles and toys. The balance of payments constrained the rate of industrial expansion and economic growth. Rice policy during the 1950s contributed to industrial development by keeping the price of the critical wage good from rising without causing a drain of foreign exchange or undue pressure on the national budget. This success was based on an increase in rice productivity and output resulting from public investments in infrastructure, agricultural research and extension, and stability in the prices of industrial products purchased by farm producers. However, stability in rice prices probably could not have been maintained in the face of the strong political pressure from rice producers if industrial development had not been recognized as a national goal.

Budgetary concerns also constrained the government from yielding to pressures from the farm bloc. Japan adopted a strict balanced budget policy in 1949 to stop the postwar inflation and maintained it throughout the 1950s. Because the government requirements for industrial development were large and government revenue was limited, the resistance of the Ministry of Finance to a deficit in the rice control program was very strong.

Changing Role of Rice and Rice Policy

The unprecedented spurt of industrial development after 1955 brought the Japanese economy into a new stage. Within ten years per capita income nearly trebled and approached the level of Western Europe. Both the industrial structure and the export structure were transformed by capital-intensive industries. Labor shortage became a feature of the economy after 1960, and the wage dif-

ferentials among enterprises of different size and between blue collar and white collar workers were greatly reduced.

Diets, particularly those of low-income manual workers, changed with the dramatic increase in income and wages of industrial workers. Before 1960, a decline of the starchy staples ratio[18] resulted mainly from reduced consumption of such inferior grains as barley. But after 1960 the share of rice also began to decrease, as shown in Chart 2. The absolute per capita consumption of rice fell sharply after 1965, from 140 kilograms in 1965 to 117 kilograms in 1969. The share of rice in consumption expenditures of urban worker households declined rapidly from 10.3 in 1959 to 4.3 in 1969 (see Table 1). The importance of rice as a determinant of the urban workers' cost of living was drastically reduced. Rice was no longer the critical wage good for industrial development.

As shown in Tables 3 and 4, by 1960 farm income and output per worker had fallen considerably relative to the income and productivity of urban workers. Strong demands of farmers for fair returns to their labor resulted in 1960 in a rice price determination formula called the Production Cost and Income Compensation Formula.

In this formula the price of rice is determined by the cost of production for paddy fields in which yield per hectare is lower than the national average by one. Since rice yield per hectare is in general inversely correlated with the cost of production per unit of output, this formula implies that the price thus determined covers the cost of production of about 85 percent of all rice output. A critical point in this formula is that the cost of family labor is valued at nonfarm wages in order to guarantee fair returns to the labor of rice producers.

With the introduction of this formula the producer price of rice rose rapidly, corresponding to the rise in industrial wages. It doubled from Y10,400 per 150 kilograms of brown rice (U.S.$193 per metric ton) in 1960 to Y20,600 (U.S.$382) in 1968. The difference between the producer price and the import price rose from less than 20 percent to well over 100 percent.

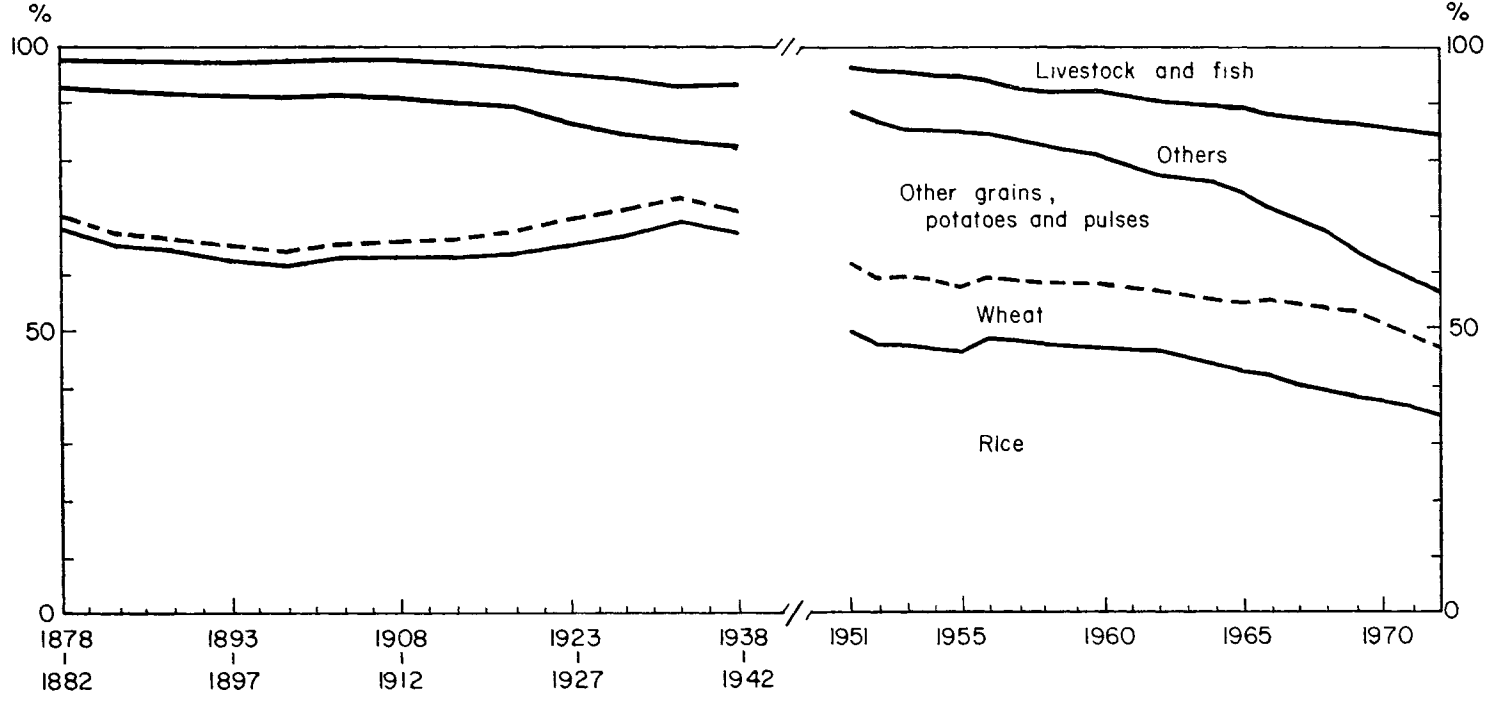
The Production Cost and Income Compensation Formula was designed to reduce the gap between farm and nonfarm income and wages. This policy goal seems to have been accomplished with higher rice prices. Agricultural income per worker relative to manufacturing income improved from 1960 to 1968 because the rapid rise in agricultural prices relative to manufacturing prices more than compensated for the relative decline in agricultural productivity (see Table 3).

Attaining the income parity objective involved substantial losses of economic efficiency. The high rice prices can be expected to have reduced consumer surplus not only by lowering demand for rice but also by preventing the shift of resources from rice to other agricultural products such as livestock and vegetables, for which demand was increasing. Rice support prices also seem to have depressed the migration of agricultural labor to nonagriculture.

A more conspicuous squandering of resources was the rapidly accumulating rice surplus in government storage and the multiplying budgetary deficit of the food control program. As the production of rice became more profitable, resources

[18] The percentage of total food calories derived from cereals, starchy roots and tubers, and starchy fruits.

CHART 2.—SHARES OF VARIOUS FOOD ITEMS IN THE TOTAL CALORIE INTAKE OF THE JAPANESE*
(1878–1942, quinquennial data; 1951–72, annual data)



* Data from Economic Ministry of Agriculture and Forestry, Minister's Secretariat, Research Section, *Shokuryo Jyukyu Hyo* (Food Balance Sheets) (Tokyo, various issues); S. Yamada and Y. Hayami, *Karori Sesshu, Suijun no Keisoku, 1874–1942* (Estimates of Calorie Intake), Basic Data Series No. 4, National Research Institute of Agriculture (Tokyo, 1969, mimeo).

TABLE 3.—CHANGES IN RELATIVE PRODUCTIVITY AND RELATIVE PRICES BETWEEN AGRICULTURE AND MANUFACTURING, 1953–71*

Fiscal year	Net product per worker, in current prices[a] (*thousand yen*)		Net product per worker in agriculture as a percentage of that in manufacturing, in current prices	Index of product prices		Agricultural product prices as a percent of manufacturing product prices	Net product per worker in agriculture as a percentage of that in manufacturing, in constant prices
	Agriculture	Manufacturing		Agriculture[b]	Manufacturing[c]		
1953–55 avg.	68	277	30	101	102	100	30
1960	99	428	23	100	100	100	23
1961	113	499	23	109	100	109	21
1962	126	508	25	120	98	122	20
1963	138	616	22	128	99	129	17
1964	155	654	24	134	99	135	18
1965	182	666	27	149	99	150	18
1966	213	791	27	160	101	158	17
1967	293	936	31	174	102	171	18
1968	317	1,048	30	177	102	173	18
1969	338	1,274	27	190	104	182	15
1970	361	1,426	25	195	109	179	14
1971	358	1,443	25	199	108	185	13

* Data from Bank of Japan, *Bukka Shisu Nenpo* (Annual Report on Price Indices), (Tokyo, various issues); Economic Planning Agency, *Kokuminshotoku Tokei Nenpo* (Annual Report on National Income Statistics), (Tokyo, various issues); Economic Ministry of Agriculture and Forestry, *Noson Bukka Chingin Chosa Hokuku* (Report on Prices and Wages in Rural Villages), (Tokyo, various issues).

[a] Net domestic product at factor cost per gainful worker. Agriculture workers include forestry workers.

[b] Ministry of Agriculture and Forestry index of agricultural product prices at farm gate.

[c] Bank of Japan index of wholesale prices of manufacturing products.

TABLE 4.—CHANGES IN RELATIVE INCOME BETWEEN FARM AND URBAN WORKER HOUSEHOLD, 1953–71*

Fiscal year	Farm household income (*thousand yen*)				Urban worker household income (*thousand yen*)		Ratio of farm household income to urban worker household income in percentages	
	Farm	Off-farm	Total	Total/person	Total[a]	Total/person	Total	Total/person
1953–55 avg.	223	127	350	55	334	70	105	79
1960	225	224	449	78	491	112	91	70
1961	237	264	501	89	542	129	92	70
1962	270	302	571	103	610	146	94	71
1963	289	353	642	118	681	163	94	72
1964	319	413	732	136	761	184	96	74
1965	365	470	835	157	821	200	102	79
1966	413	535	948	182	904	223	105	82
1967	510	625	1,135	221	992	247	114	89
1968	527	721	1,248	247	1,082	275	115	90
1969	529	870	1,399	283	1,206	312	116	91
1970	508	1,084	1,592	326	1,385	358	115	91
1971	470	1,306	1,776	372	1,527	396	116	94

* Data from Economic Ministry of Agriculture and Forestry, Statistical Information Division, "Noka Keizai Chosa Hokoku" (Data on Agricultural Price Policy), Tokyo, May 1970, mimeo; Office of the Prime Minister, Bureau of Statistics, *Nihon Tokei Nenkan* (Japan Statistical Yearbook), (Tokyo, various issues).

[a] Includes transfer income.

were shifted to rice production. Rice production rose until it reached a record of 14.4 million metric tons in 1967. Meanwhile, consumption remained stable until 1965 and then rapidly declined, resulting in an annual addition of 2 million metric tons to government rice storage (see Table 5). The deficit of the rice control program reached 40 percent of the budget of the central government for agriculture and forestry, nearly 5 percent of total national budget in 1968 (see Table 2).

Economic inefficiency was tolerated largely because of the strong political pressure of farm organizations. The basic reason why the government and society could yield to the farmers' pressure for the rise in rice prices was that rice was no longer a critical wage good for industrial development. Due to the rise in capital intensity and the transformation in industrial structure, a rise in the cost of living and in wages had become less critical for the international competitiveness of Japanese industry.

The constraint on the government budget for the rice price support program was also reduced. Within only five years, from 1960 to 1965, the budget of the central government more than doubled even though the balanced budget policy was maintained (see Table 2). Although the deficit of the Food Control Special Account grew to be large, the budgetary constraint on price supports also shifted upward with the high rate of economic growth.

In the absence of countervailing forces, it has been relatively easy for farmers to achieve their political goals. Although agricultural population declined rapidly, the electoral districts changed little. Consequently, one rural vote is still worth four to seven votes in Tokyo. Moreover, the rural sector has voted solidly for the Liberal Democratic Party, which has monopolized the government since 1948. With urban votes shifting to the radicals, the government had no choice but to accept the policies which protected and supported the interests of farmers.

In retrospect, the cost of rice price supports during the 1960s appears to be one of the costs of economic growth that society has had to bear. If price determination had been left to a market mechanism, there would have been a dramatic decline in rice prices, resulting in an extremely wide income disparity between rural and urban sectors. In the long run, labor and other agricultural resources would have been efficiently reallocated to the production of other commodities or to manufacturing and service industries. But, in the short run, this kind of change might have generated more social tension than the present political system could have absorbed.

The price supports alone were not responsible for achieving farm-nonfarm income parity. Farmers have supplemented their income by earnings from nonfarm employment. The rapidly growing nonfarm sector has provided abundant opportunities for off-farm employment, and since 1963 the off-farm income of farm households has exceeded the income from farming (see Table 4). According to the 1965 Census of Agriculture, almost 80 percent of the farms were classified as part-time farms, of which almost half were classified as "part-time of the second type," increased to 85 percent and 50 percent, respectively.

Recent Development

By the end of the 1960s it had become apparent that the cost of rice price supports exceeded the limit that society would tolerate. The drain of agricultural

TABLE 5.—PRODUCTION, INVENTORY CHANGE, IMPORT, AVAILABLE SUPPLY, AND CONSUMPTION OF RICE, 1955–72*

Fiscal year	Production	Inventory change of brown rice (*thousand metric tons*)	Net import of brown rice (*thousand metric tons*)	Available supply of brown rice: Total (*thousand metric tons*)	Available supply of brown rice: Per capita (*kilograms*)	Net consumption of polished rice[a]: Total (*thousand metric tons*)	Net consumption of polished rice[a]: Per capita (*kilograms*)
1955	12,385	2,400	1,290	11,275	127	9,882	111
1956	10,899	−201	558	11,658	130	10,077	112
1957	11,464	−449	433	12,346	135	10,589	116
1958	11,993	224	403	12,172	133	10,421	114
1959	12,501	411	247	12,337	133	10,553	114
1960	12,858	459	219	12,618	135	10,738	115
1961	12,419	−566	77	13,062	138	11,073	117
1962	13,009	−124	182	13,315	140	11,256	118
1963	12,812	−359	239	13,410	139	11,275	117
1964	12,584	−275	502	13,361	138	11,257	116
1965	12,409	468	1,052	12,993	140	10,982	118
1966	12,745	921	679	12,503	126	10,481	106
1967	14,453	2,334	364	12,483	124	10,361	103
1968	14,449	2,428	230	12,251	121	10,147	100
1969	14,003	1,646	−392	11,965	117	9,950	97
1970	12,689	−281	−760	12,210	118	9,860	95
1971	10,887	−3,295	−849	13,333	127	9,784	93
1972	11,889	−1,670	−458	13,101	123	9,763	92

* Data from Economic Ministry of Agriculture and Forestry, *Shokuryo Kanri Tokei Nenpo* (Annual Report on the Statistics of Food Control), (Tokyo, various issues).
[a] Available supply minus quantity used for seed, feed, and industrial use.

resources as well as public funds to rice became increasingly serious. For example, the dramatic rise in the prices of vegetables and fruits, which now occupy the same weight in consumers' expenditures as rice, was recently identified as one of the major causes of the rise in the consumer price index. Yet the government could not appreciably increase expenditures for improvements in production and marketing of vegetables and fruits because of the increasing deficit of the food control program. In the budget of 1971, for example, only Y3 billion were allocated for the improvement of vegetable production and marketing, much less than one percent of the rice control expense.

The multiple effects of an accumulating rice surplus and deficit in the rice price control program finally halted further price hikes in 1968. The government launched a program for retirement and diversion of paddy fields in 1969 to check the increasing deficit and to counteract the resource drain to rice. Subsequently, the producer price of rice was fixed for three years. In 1971 the government set a limit to rice purchases of 5.8 million metric tons; this policy marked the first major change in the policy since the Rice Control Law of 1933 when the government initiated the purchase of rice in unlimited quantity. The government also lifted controls on the consumer price of rice.

Indirect control may have appeared to be only a step away. However, a strong campaign against this shift was waged by the powerful agricultural cooperatives which have 5 million members and 400,000 employees. Their marketing, storage, and credit operations are critically based on the rice control program in which cooperatives serve as sole agents for the delivery of rice from farmers to government warehouses.

For the past decade, despite the strong demand of farmers and cooperatives for agricultural protection and price support, Japanese agriculture has been progressively interlocked in the network of the international division of labor. Corresponding to the shift in comparative advantage to manufacturing, the rates of self-sufficiency in food and agricultural products have declined (see Table 6). Especially dramatic was the decline in self-sufficiency for winter cereal crops (wheat and barley) and soybeans. The effort to increase domestic agricultural production was weakened in the late 1960s under the pressure of surplus rice as well as by the optimistic prospect for world food supplies due to the spread of the Green Revolution in Asia.

In 1972 a world food crisis was triggered by poor worldwide crops. Voices for the international division of labor were reversed. Food self-sufficiency again became a popular political slogan. This mood was reinforced by the energy crisis emerging from the oil supply cuts by the Arabs. The farm bloc took advantage of this situation and succeeded in increasing the government procurement price of rice by 16 percent in 1973 and by 37 percent in 1974. Demands for government policy to increase agricultural production, such as land infrastructure investment, were also strengthened.

CONCLUSIONS AND IMPLICATIONS

Changes in rice policy in Japan since the Meiji Restoration can be explained under an assumption that the national goal was to promote industrial develop-

TABLE 6.—PERCENTAGE OF MAJOR FOOD REQUIREMENTS PRODUCED IN JAPAN*

	1960	1965	1970	1972[a]
Total food[b]	90	81	76	73
Grains:	83	61	48	43
Rice	102	95	106	100
Wheat	39	28	9	5
Barley	107	73	34	18
Soybeans	28	11	4	4
Fruits	100	90	84	82
Meat	91	89	88	81
Dairy products	89	86	89	80
Eggs	101	100	97	98
Sugar	18	30	23	20
Concentrate feed[c]	67	36	33	36

* Data from Economic Ministry of Agriculture and Forestry, *Showa 48 Nendo, Nogyo no Doko ni Kansuru Nenji Hokoku* (Annual Report on the State of Agriculture, 1973), (Tokyo, 1974).

[a] Preliminary.

[b] Domestic production divided by domestic consumption.

[c] In terms of digestible nutrients.

ment by securing a cheap supply of rice for urban workers. This goal had to be attained without causing social instability in the rural sector and without causing a drain on foreign exchange by large-scale rice imports. The land tax revision and the development of landlordism during the Meiji period worked unconsciously to achieve a rice surplus. More conscious policies were to increase rice production by public investments in infrastructure, such as irrigation and drainage, and by agricultural research and extension. When the domestic supply of rice could not keep up with demand, rice production was promoted in overseas colonies.

Similar policies with the same objective were implemented for the recovery of the Japanese economy from the devastation of World War II. The government's rice control program during the 1950s was successful in keeping rice prices stable without increasing rice imports. This result contributed substantially to the post-recovery growth and capital accumulation in industry and prepared the way for rapid economic transformation in the 1960s.

While industry developed rapidly on the basis of a stable food supply, agriculture was left behind, and the income disparity between farmers and urban workers increased. Farmers considered themselves ill-treated and demanded fair returns for their labor, comparable to the wages of industrial workers. When the economy and the industrial structure were transformed by the spurt of industrial development beginning in the mid-1950s, the role of rice as a wage good declined. Under these circumstances the resistance of the urban sector to high rice prices was reduced. The political pressure of agricultural producers thus succeeded in forcing the government to adopt the rice price support policy to achieve farm-nonfarm income parity.

Farm price supports are pervasive in the developed economies. As is shown in Table 7, the level of agricultural support in Japan was much lower than that in the European Economic Community (EEC) in 1955 when per capita income was below U.S.$500. But in 1965 when per capita income in Japan reached that of the

TABLE 7.—COMPARISON OF THE LEVELS OF AGRICULTURAL PRICE SUPPORT BETWEEN JAPAN AND WESTERN EUROPEAN COUNTRIES*

	Rate of agricultural price support[a] (*percent*)	
	1955	1965
Japan	8.9	38.6
Belgium	34.4	28.9
France	21.6	29.2
Germany	27.4	36.8
Italy	35.3	37.9
Netherlands	12.9	18.3
United Kingdom	33.7	18.3

* Data from K. Hemmi, *Nogyo* (Agriculture), (Tokyo, 1970).
[a] Percent by which domestic output valued at domestic prices exceeds domestic output valued at international prices.

EEC, the level of Japanese agricultural support was also raised to and even exceeded European levels. In terms of the logic of the political economy of rice, Japan's adoption of a price support policy in order to reduce the rural-urban income gap was a natural consequence of joining the club of rich countries.

Japan's experience is of significance to contemporary developing countries in South and Southeast Asia. These nations are attempting to convert the new food production potentials of the Green Revolution into a base for sustained economic growth. As the Japanese experience suggests, the food production potential, if properly exploited, can contribute to capital accumulation and development by reducing the cost of labor in industrial production and in agricultural production for export.

Whether these possibilities materialize depends to a large extent on efficient public investments in land infrastructure, agricultural research and extension, on an efficient organization of marketing and agrarian institutions, and on appropriate tax and credit policies. Conversion of the potential surplus of food staples into industrial growth or into the development of an export crop sector, while maintaining equity within the rural population and between rural and urban sectors, will require extreme skill for the developing countries in the decades to come.

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