INTERACTION OF JAPANESE RICE AND WHEAT POLICY AND THE IMPACT ON TRADE

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An important objective of Japanese agricultural policy since the early 1960s has been to increase farm incomes by raising the farm price of rice, the country's principal agricultural crop (Hayami). This objective was accomplished through a two-tiered pricing scheme administered by the Japanese Food Agency, the country's principal purchaser and seller of rice, which maintained producer support prices at levels higher than the consumer equivalent. However, in recent years, the accumulation of excess rice stocks has forced Japan's policymakers to implement major changes in rice policy to reduce persistent overproduction. These policies include diversion payment programs that provide incentives to divert paddy land to production of priority crops such as wheat, barley, and soybeans, as well as surplus disposal programs that subsidize the disposal of accumulated rice stocks for export, industrial, and feed use. Other policy changes include adjustments in the wholesale (resale) prices of rice and wheat to favor rice consumption, and adjustments in producer support prices to promote production of competing crops. This study analyzes the impact on trade of recent changes in Japanese rice and wheat policy.

Japan's rice policy affects the international rice and wheat markets because of the substitutability between the two commodities. Japan's exports of surplus rice compete with exports from the more traditional suppliers such as the United States.[1] At the same time, domestic pricing policies and programs that promote production of wheat and/or promote consumption of rice affect Japanese demand for wheat imports. The impact of rice and wheat policies on Japan's wheat imports is of interest to the United States because Japan is a major importer of U.S. wheat.

Previous studies of Japanese agriculture have focused on the social costs of agricultural programs (Bale and Greenshields; Bale), or have analyzed the effect of a change in the resale wheat price on Japanese wheat imports (Greenshields). This study provides a more comprehensive framework for analysis of Japanese agricultural policies by considering explicitly the interaction of Japanese rice and wheat policies. An econometric model of the Japanese rice and wheat sectors is estimated and used to quantify the trade impacts of Japan's current rice and wheat policies.

RICE AND WHEAT POLICY IN JAPAN

Pricing and marketing of rice and wheat are controlled by the Japanese Food Agency, according to the Food Control Law of 1942. Domestic rice and wheat prices form a two-tiered price system, with high prices for producers and lower prices for consumers; losses on purchases and sales are absorbed by the government.

Rice is sold either directly to the government or to officially designated dealers (mainly local cooperatives), who constitute a "semi-controlled" market.[2] Rice prices fixed by the government are applied only to government-controlled purchases. However, because of the availability of "standard grade rice" at government prices, it is often difficult to sell rice from the "semi-controlled" market at competitive levels (Ministry of Agriculture, Forestry and Fisheries, Food Agency).

Wheat imports are controlled by the Japanese Food Agency through quota arrangements with licensed traders.[3] In principle, wheat producers are free to sell their crops to any purchaser, but in practice, almost all sales are made to the government because of the high government purchase price.

Government policies designed to reduce the accumulation of rice stocks affect wheat trade through the use of three policy tools: government-determined resale prices of rice and wheat; government-determined producer support

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[1] Japan agreed to restrict rice exports to about 400,000 tons (milled) over a period of four years during U.S.-Japanese consultations in April 1980. Additional trade impacts for feed grains could result from disposal of rice in livestock feed. The current surplus disposal program, which began in 1979–80, plans for feed disposal starting in 1981. Trade impacts of Japanese policies on feed use are not discussed in this paper.

[2] This partially free market was established in 1969 in order to reduce the cost of rice control to the government and to improve the quality of rice marketed (Organisation for Economic Co-operation and Development, 1974).

[3] Wheat imports are physically managed by licensed traders who sell all imported wheat to the government at the port.

prices; and diversion payments for rice producers, which promote the production of wheat at the expense of rice. Rice diversion programs have been in effect since 1969 (see Organisation for Economic Cooperation and Development, 1979, for a description of these programs).

The interaction of rice and wheat policies and their impact on wheat trade is shown in Figure 1, where D and S represent Japanese domestic demand and supply for wheat. Wheat imports are equal to the quantity $Q_0 - Q_1$ at the wheat resale price of PRW and the producer price of PPW. Increases in the resale and producer wheat prices to levels represented by PRW′ and PPW′ result in a decrease in wheat imports to $Q_2 - Q_4$.[4] In addition, payments to divert paddy land from rice to wheat, resulting in a shift in the wheat supply schedule from S to S′, further reduce wheat imports to $Q_3 - Q_4$.

To the extent that the above policies result in a reduction in the imbalance between rice production and consumption, rice supplies available for future surplus disposal decline. Japan is currently implementing a 5-year surplus disposal program, begun in 1979–80, to dispose of accumulated excess rice stocks through subsidized use as feed, in industrial use, and as exports.

STRUCTURAL ECONOMETRIC MODEL

The empirical model of the Japanese rice and wheat sectors is comprised of 11 equations, of which 7 are behavioral. The wheat sector has 3 behavioral equations (acreage, domestic consumption, and wheat inventory) and 2 identities (domestic supply and market clearing, the latter defining wheat imports). The rice sector has 4 behavioral equations (acreage, yield, domestic consumption, and rice export); and 2 identities (domestic supply and market clearing, the latter defining rice stocks).

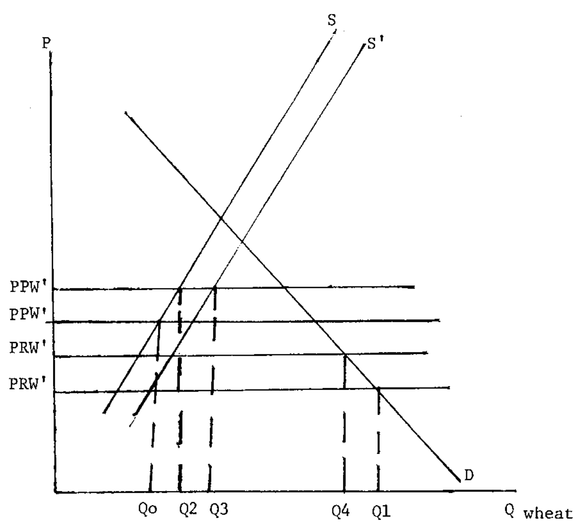

FIGURE 1. Impact of Japanese Rice and Wheat Policies on Wheat Trade

The Japanese Food Agency has been the residual claimant for surplus rice stocks over much of the estimation period. For this reason, rice stocks are assumed equal to the difference between Japan's supply and demand for rice. In contrast, wheat stocks accumulated by the agency are assumed to be desired, based upon the government's requirements for working and/or food security stocks. A wheat yield equation was not estimated because yields appear to have remained fairly stable over the estimation period.

Wheat Sector

The specification of the wheat model is

$$(1)\quad AW_t = \alpha 1 + B_{11}\, AW_{t-1} + B_{12}\, PPW_{t-1}/PPI_{t-1} + B_{13}\, PPR_{t-1}/PPI_{t-1} + B_{14}\, MAN_t/CPI_t + B_{15} DV_t/PPI_{t-1} + \varepsilon_{1t},$$

$$(2)\quad QDW_t = \alpha 2 + B_{21}\, Y_t/CPI_t + B_{22}\, PRW_t/CPI_t + B_{23}\, PRR_t/CPI_t + \varepsilon_{2t},$$

$$(3)\quad \Delta WS_t = \alpha 3 + B_{31}\, WS_{t-1} + B_{32}\, EXR_t + B_{33}\, D_3 + \varepsilon_{3t},$$

$$(4)\quad QWS_t = (AW_t) * (YDW_t),$$

$$(5)\quad MW_t = QDW_t * POP_t + \Delta WS_t - QWS_t$$

where t refers to the time period. AW is acreage planted in wheat; PPW, the government support price for wheat; PPI, an index of prices paid for inputs, 1975=1000; PPR, the government support price for rice; MAN, an index of wages in the manufacturing sector, 1975=1000; CPI, the consumer price index, 1975=1000; DV, payments paid to producers to divert paddy land; QDW, per capita wheat consumption; Y, per capita gross national product; PRW, the government resale price of wheat; PRR, the retail price of rice; WS, ending wheat inventory; EXR, the U.S. $/yen exchange rate; D3, a dummy variable representing Japanese policy to hold larger stocks, 1975–76–1977–78 =1, =0 all other years; QWS, total domestic wheat supply; YDW, wheat yield; MW, wheat imports; and POP, population. The εs represent random residuals.

Equation (1) is based upon standard Nerlovian supply response, with adaptive expectations in

[4] Wheat producers have been given increased incentive to produce wheat since 1974, when bonus payments were announced in addition to the support price. The bonus payment was incorporated into the wheat support price in 1976. Rice producers also receive additional incentive payments to double-crop rice and wheat. On the consumption side, announced increases in the resale wheat price were larger than increases in the rice resale price for 1980 and 1981.

which acreage planted in wheat is a function of the expected prices of wheat, competitive crops, and inputs. This formulation is used because government support prices are not announced until after the decisions to plant the crops have been made. The coefficient B_{11} measures the adjustment of actual acreage to desired acreage. MAN represents the opportunity cost of wheat production in terms of income that could be earned in the non-farm sector. The diversion payment variable DV represents additional returns to wheat production, and is expressed in current terms because these payments are announced in advance of the planting season.

Equation (2) is a reduced-form demand equation derived from a consumer demand function for wheat noodles, a supply function for the intermediate marketing sector, and a market clearing identity.[5] Equation (3) relates government-held wheat stocks to economic and policy variables. The Japanese Food Agency is assumed to have a desired or target level of stocks to which adjustment in the current period is measured by the coefficient B_{31}. The exchange rate EXR is included in place of the world wheat price because domestic wheat prices are controlled by the government: thus there is no incentive for speculative stockholding. In addition, money for purchase of imported wheat is allocated in the budget at the start of the fiscal year, so that a change in the exchange rate will increase or decrease the amount of allocated money in terms of dollars. It is expected that an increase in EXR will raise the cost of imported wheat to the government and decrease the amount of wheat imported for storage. D3 is included in equation (3) to account for the government's policy to increase stocks after the period of international instability, 1973–75. Equations 4 and 5 are identities that define total domestic wheat supply and wheat imports.

Rice Sector

The specification of the rice sector model is

$$(6)\quad AR_t = \alpha 6 + B_{61} AR_{t-1} + B_{62} PPR_{t-1}/PFI_{t-1} + B_{63} PPW/PPI_{t-1} + B_{64} PPV_{t-1}/PFI_{t-1} + B_{65} DV_t/PPI_{t-1} + B_{66} MAN_t/CPI_t + B_{67} D1 + \varepsilon_{6t},$$

$$(7)\quad YDR_t = \alpha 7 + B_{71} AR_t + B_{72} PPR_{t-1}/PFI_{t-1} + B_{73} D2 + \varepsilon_{7t},$$

$$(8)\quad QDR_t = \alpha 8 + B_{81} Y_t/CPI_t + B_{82} PR_t/PN_t + B_{83} PF_t/CPI_t + \varepsilon_{8t},$$

$$(9)\quad REX_t = \alpha 9 + B_{91} RS_{t-1} + B_{92} (D4 * PTR_{t-1}/PIC_{t-1}) + B_{93} D3 + \varepsilon_{9t},$$

$$(10)\quad QRS_t = (AR_t) * (YDR_t),$$

$$(11)\quad \Delta RS_t = QRS_t - QDR_t * POP_t - REX_t.$$

AR is acreage planted in rice; PFI, an index of prices paid for fertilizer, 1975=1000; PPV, an index of prices paid for vegetables, 1975=1000; D1, a dummy variable representing a change in diversion policy that discontinued payments for fallowed land, 1961–62–1973–74 =0, =1 otherwise; YDR, rice yield; D2, a dummy variable representing low rice yields not attributable to economic factors, 1971–72 and 1976–77 =1, =0 otherwise; QDR, per capita consumption of rice; PR, resale price of rice; PN, retail price of dried wheat noodles; PF, index of retail prices of fish, 1975–76=1000; REX, rice exports; RS, ending rice stocks; PTR, export price of Thai rice; PIC, import price of corn; D4, dummy variable representing disposal of rice for feed, 1970–71–1973–74 =1, =0 otherwise; QRS, total rice supply; and all other variables were defined previously.

Equations (6) and (8) are specified similarly to equations (1) and (2). In addition, the price of fish, PF, is included in (2) on the assumption of its complementarity to rice. Equation 7 relates intensification of fields to acreage and expected prices. Equation (9) relates the supply of rice exports to the level of carry-in rice stocks, RS_{t-1}, and expected international rice and corn prices. Rice stocks are included because the government's decision to export is based upon its supply of surplus stocks. The ratio between world rice and corn prices is important to the government in rationing surplus stocks between export and feed use. This variable is relevant only in periods when a program for disposing of surplus rice in feed is in operation (1970–73). Without such a program, ordinary use of rice as feed is insignificant because of the relationship between internal Japanese rice prices and those of other feed ingredients. Equation 10 is an identity defining the total domestic supply of rice, and equation 11 is the market clearing identity defining rice stocks.[6]

MODEL ESTIMATION

It was assumed that prices are not determined endogenously in the model because of government price control at the retail, wholesale, and

[5] Specifically, the three equations from which the wheat demand function is estimated are: (a) QDN = f(PN, PRR, Z); (b) QDW = f(PN, PRW,); and (c) QDN = α QDW, where QDN is consumption of wheat noodles, and Z represents other exogenous factors. Eliminating PN in (b) and substituting into (a), and substituting (c) into (a) obtains the reduced form equation (d) QDW = f(PRW, PRR, Z). Alternatively, it could be assumed that retail margins are constant over time.

[6] Diversion of rice into industrial and feed use is not included in equation 11. Diversion into industrial use has had almost no effect on stocks, because it basically replaces new-crop rice with old-crop stocks and results in little or no net stock drawdown. Use of rice in processed feed has been negligible, except during the 1970–73 surplus disposal program. No behavioral equation for disposal of rice as feed could be estimated because of the lack of sufficient observations.

producer levels. Therefore, ordinary least squares (OLS) yields consistent and unbiased estimates of the parameters for equations 1–3 and 6–9. The period of estimation is for 1961–62 to 1977–78, except for the rice export equation, which was estimated for the period 1969–70 to 1977–78.[7]

Results of estimation, shown in Table 1, indicate that rice diversion payments (DV) have been an important factor in reducing rice acreage over the period of estimation, but are not significantly related to wheat acreage (equations 1 and 6). Crops to which paddy land has been diverted over the period of the diversion programs include forage, vegetable crops, and fruits. However, recent increases in diversion payments make wheat more competitive with rice, as well as with other crops. The negative coefficient of MAN in both equations indicates that increases in wages have been an important factor in reducing acreage both of wheat and rice over the estimation period.

TABLE 1. OLS Estimates of Structural Equations, Japanese Wheat and Rice Sector Model, 1960–77

No.	Estimated Equation[a]	
1.	$AW_t = \underset{(1.372)}{342.699} + \underset{(3.452)}{.678}\, AW_{t-1} + \underset{(1.962)}{.002}\, PPW_{t-1}/PPI_{t-1}$ $- \underset{(-1.787)}{3.691}\, MAN_t/CPI_t - \underset{(-2.500)}{.001}\, PPR_{t-1}/PPI_{t-1} + \underset{(.417)}{.020}\, DV_t/PPI_{t-1}$	$\bar{R}^2 = .99$ $n = 17$
2.	$QDW_t = \underset{(9.665)}{.066} - \underset{(-2.019)}{.055}\, Y_t/CPI_t - \underset{(-4.160)}{.0003}\, PRW_t/CPI_t + \underset{(2.079)}{.0002}\, PRR_t/CPI_t$	$\bar{R}^2 = .84$ $DW = 1.75$ $n = 17$
3.	$\Delta WS_t = \underset{(4.509)}{1790.330} - \underset{(-5.554)}{1.071}\, WS_{t-1} - \underset{(-2.474)}{2.005}\, EXR_t + \underset{(4.357)}{395.750}\, D3$	$\bar{R}^2 = .68$ $DW = 1.65$ $n = 17$
6.	$AR_t = \underset{(5.760)}{2833.700} + \underset{(2.120)}{.265}\, AR_{t-1} + \underset{(5.661)}{990.568}\, PPR_{t-1}/PFI_{t-1}$ $- \underset{(-1.496)}{.005}\, PPW_{t-1}/PPI_{t-1} - \underset{(-5.760)}{606.262}\, PPV_{t-1}/PFI_{t-1} - \underset{(-4.071)}{.337}\, DV_t/PPI_{t-1}$ $- \underset{(-2.245)}{6.784}\, MAN_t/CPI_t + \underset{(3.152)}{355.498}\, D1$	$\bar{R}^2 = .99$ $n = 17$
7.	$YDR_t = \underset{(5.621)}{5.275} - \underset{(-2.622)}{.0006}\, AR_t + \underset{(2.641)}{.889}\, PPR_{t-1}/PFI_{t-1} - \underset{(-2.709)}{.414}\, D2$	$\bar{R}^2 = .69$ $DW = 1.20$ $n = 17$
8.	$QDR_t = \underset{(48.552)}{.171} - \underset{(-4.868)}{.029}\, Y_t/CPI_t - \underset{(-3.505)}{.0001}\, PR_t/PN_t - \underset{(-2.114)}{.0002}\, PF_t/CPI_t$	$\bar{R}^2 = .98$ $DW = 1.43$ $n = 17$
9.	$REX_t = \underset{(-1.038)}{-102.940} + \underset{(4.678)}{.065}\, RS_{t-1} + \underset{(2.641)}{83.899}(D4^{*}\, PTR_{t-1}/PIC_{t-1})$ $- \underset{(-3.316)}{226.543}\, D3$	$\bar{R}^2 = .95$ $DW = 2.30$ $n = 9$

[a] t-values in parentheses.

[7] The data are on a Japanese fiscal year basis, April-March, except for wheat data which are on a July-June basis. The rice export equation was estimated from 1969–77 because previously, Japan was a large net importer of rice. Data for estimation were obtained from the Japan Prime Minister's Office, Ministry of Agriculture, Forestry and Fisheries, and U.S. Department of Agriculture, Foreign Agricultural Service (FAS).

Negative coefficients for Y_t in both the rice and wheat demand equations (equations 3 and 8) indicate that per-capita consumption of these commodities has not decreased with income. These results were also obtained by Greenshields and by the U.S. Department of Agriculture Economics, Statistics, and Cooperatives Service. Per-capita consumption of rice in Japan has declined continuously since 1962, and consumption of wheat products has declined in recent years. Consumption of animal products has increased at the same time (Roberts, et al.).

The negative coefficient for EXR in equation 3 indicates that the cost of foreign exchange is an important element in determining the demand for wheat stocks. This result suggests some flexibility based upon cost factors in Japanese wheat import quotas. The coefficient of WS_{t-1} indicates almost perfect adjustment of actual to desired stock levels. Estimation results also indicate that, during the earlier surplus disposal program 1970–71–1973–74, the volume of rice exported was partly determined by relative prices of rice and imported corn (equation 7).

VALIDATION

To validate the model, Newton's Method was used to simultaneously solve the eleven equations in the model over a nine-year period from 1969 to 1977 (see Jabara for complete details).[8] Predicted values closely followed the trends of actual values. Deviations between predicted and actual values averaged less than 10 percent for rice production, wheat imports, wheat and rice consumption, and wheat stocks. Deviations between predicted and actual values for wheat acreage averaged less than 27 percent, with the largest deviations in 1974 (the first year of the wheat bonus program) and in 1977. Rice exports are over-estimated in 1975–77, years in which Japanese rice exports were small. Estimated production and consumption elasticities are shown in Table 2.

SIMULATION RESULTS

Equations 1–11 were used to analyze the impact of exogenous increases in the resale and producer support prices of rice and wheat on Japanese rice stocks, wheat imports, and rice exports. The model was first solved for a base period, year 1, using the observed values of all predetermined variables. The price changes were introduced into the model in the second year, and the model was solved recursively for 5 years to estimate the time paths of adjustment to the specified changes (see Novakavic and Thompson for a description of this procedure). No price changes were made after year 2.

TABLE 2. Estimate of Elasticities at Means

Elasticities	Wheat[a] Short run	Wheat[a] Long run	Rice Short run	Rice Long run
(1) Price elasticity of supply	.74	2.30	.31	.42
(2) Cross price elasticity of supply	-.76	-2.36	-.18	-.25
(3) Price elasticity of demand	-	-.33	-	-.08[b]
(4) Cross price elasticity of demand	-	.11	-	-
(5) Diversion payment elasticity	.02	.07	-.03	-.04

[a] The estimated wheat production elasticities are computed from a smaller base than estimated rice production elasticities.

[b] Price variable is ratio of resale rice price to the retail price of noodles.

The base year chosen was 1973 because this is the last year for which data are available when Japan was administering a surplus rice disposal, as well as a diversion program. Since Japan is currently administering a 5-year surplus disposal program (1979–80–1984–85) and a 10-year diversion program (1978–79–1988–89), it is believed that current conditions are similar to that earlier period.

The simulated impact of the price changes are summarized in Table 3. Simulation I presents the impact of an 11.0-percent increase in the resale price of wheat relative to rice, and a 2.4-percent increase in the producer price of wheat relative to rice from 1973 base values.[9] Similar percentage increases in resale prices were effective in February, 1980, and a similar percentage increase in the wheat producer price went into effect for the 1979–80 crop year. Simulation results indicate projected changes in the endogenous variables following these price changes (year-2 values), as well as the projected cumulative changes, under the assumption the policies are maintained over a 5-year period.

The results of simulation I indicate an immediate decline in wheat imports of 3.6 percent and decline of 4.0 percent from the base value by year 5. However, this policy by itself is not sufficient to bring about a large decrease in rice production. Rice stocks decline 7.7 percent from their base 1973 level by year 5 because of increased rice consumption and decreased rice production. Rice exports decline 4.2 percent by year 5 as a result of reduced availability of surplus stocks.

[8] The version of Newton's Method used is contained in the TROLL Simulation Package. (See MIT Center for Computational Research in Economics and Management Science for a description.)

[9] The increase in the retail wheat noodle price was limited to .4 of the increase in the wheat resale price: wheat represents about 40 percent of the cost of the noodles.

TABLE 3. Comparison of Actual 1973 Values with Solution Values for 1973 and Simulation Results

Variable	Actual value 1973	Base solution value 1973	Simulation I projected values: Year 2[a]	Percentage[b] change	Percentage[c] change year 5	Simulation II projected values: Year 2[d]	Percentage[b] change	Percentage[c] change year 5
Wheat imports	5353	5400	5208	-3.6	-4.0	5195	-3.8	-5.2
Wheat production	202	155	170	9.6	25.5	182	17.4	64.5
Rice exports	392	418	418	0.	-4.2	418	0.	-26.5
Rice production	12149	12143	12103	-.3	-.4	11920	-1.8	-4.0
Rice stocks	4095	4260	4196	-1.5	-7.7	4012	-5.8	-48.9

[a] Increase in the relative wheat to rice resale price of 11 percent and an increase in the relative wheat to rice producer support price of 2.4 percent.
[b] Percent change of year 2 from the base solution value.
[c] Percent change of year 5 value from the base solution value.
[d] Increase in the rice diversion payment from 400,000 yen per hectare to 550,000 yen per hectare in addition to changes in Simulation I.

Simulation II presents the scenario of increasing the rice diversion payment by 34 percent in addition to the changes introduced in simulation I. A similar percentage increase in the rice diversion payment took place in the 1978–79 crop year.[10] The simulation results show that the increase in the diversion payment results in an increase in wheat production of 17 percent and a decrease in rice production of 2 percent in year 2.[11] Wheat imports decline 4 percent in year 2, and 5 percent in year 5. This decline in wheat imports is coupled with a larger percentage decline in rice exports of 26 percent by year 5. Thus, these rice policies result in decreased wheat imports and a decreased supply of surplus rice, which in turn reduces rice exports, all other things equal.

The diversion policy in combination with pricing policies results in a decline of 50 percent in rice stocks from the base value by year 5, or a decline of 1,962,000 metric tons (brown basis). This decline is short of the 70-percent decrease from the 1979–80 stock levels estimated by FAS that was desired by Japanese officials (Ministry of Agriculture, Forestry, and Fisheries, Food Agency).

CONCLUSIONS

Japanese rice and wheat policies affect trade through their impact on Japan's wheat imports and rice exports.[12] The United States has an interest in the trade effects of these policies because Japan is a major importer of U.S. wheat (10 percent of the value of U.S. wheat exports in 1979). In addition, Japanese rice exports compete with U.S. rice exports in traditional Asian markets.

The results of this analysis indicate a decline in wheat imports of about 4 to 5 percent (from 1973 base values), all other things equal, from percentage changes in producer and consumer prices, and in diversion payments introduced in recent years. The decrease in projected wheat imports in the analysis may be underestimated as the new diversion payment levels make wheat production competitive with rice in contrast to the period of estimation. Further increases in wheat producer and resale prices in following years may work further to decrease wheat imports, all other things constant.

At the same time, the paddy field diversion program appears to be an effective policy in reducing surplus stocks. However, its success depends upon such factors as weather and future demands for increases in rice support prices. Unusually favorable weather in Japan resulted in bumper rice crops in 1978 and 1979 and in increased rice stocks, despite the diversion program effort.

A further note of caution to the interpretation of these results is that Japan agreed to limit rice exports to about 400,000 tons (milled) over a period of 4 years in a recent U.S.-Japan bilateral agreement. Because the rice export equation was estimated over a period in which such an agreement did not exist, the estimated relationship between rice stocks and rice exports may not hold. This limit on exports, while working to stabilize rice export markets, will place increased dependence upon feed disposal programs and/or diversion programs to reduce accumulated rice stocks. Increased reliance on rice diversion programs may work to reduce wheat imports additionally in the future.

[10] This policy simulation represents an increase in the diversion payment received by rice producers from 400,000 yen per hectare, to 550,000 yen per hectare. Rice farmers actually receive different incentives for retiring rice area, depending on the crop they decide to cultivate.
[11] The effect of the diversion payment on wheat acreage should be interpreted with a degree of caution, because the diversion payment variable was not significant at acceptable levels in equation 2.
[12] Future feed grain trade may be affected by these impacts, but is not discussed in this paper.

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