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Rice Sector Policies in Japan

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Abstract

Japan's rice sector is supported by high prices paid by consumers that allow many farm households to maintain small rice farms. Japan's government controls trade within a tariff-rate quota and imposes a prohibitively high tariff on imports outside the quota. Within Japan, diversion programs pay farmers to substitute other crops for rice since, without government-mandated diversion, supply would exceed demand at the price levels in Japan's market. Farmers are compensated for market price declines below a moving average of past prices. Government subsidies are used to restructure farming into larger operations, enabling lower production costs. Japan freed its wholesale and retail rice markets from government control in the late 1990s, and market prices have been gradually falling. Nevertheless, producer prices are 10 or more times higher than prices in other japonica rice-growing countries, and consumer prices are 2-3 times higher.

Keywords: Japan, rice, policies, domestic support, trade, trade liberalization, tariff-rate quota.

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Introduction

This article is one in a series examining Japan's policies that protect and regulate its agricultural markets. Its policies are of special interest both because Japan is one of the world's leading agricultural importers and because they are subject to review in the current "Doha" round of global trade negotiations conducted by the World Trade Organization (WTO).

Rice, the traditional staple food of Japan, is grown throughout the country's main islands. Production is almost exclusively on specially laid out rice paddies, where summer rains and an extensive network of irrigation facilities provide abundant water. Almost all rice is japonica—a short-grain variety widely grown in Northeast Asia. Income from rice farming is about 25 percent of Japan's total agricultural income, and most Japanese farmers derive part of their income from rice, either by raising rice or contracting out paddy land for rice growing.

Rice has long been a fundamental feature of Japan's agriculture. Rice paddies in Japan's lowlands are irrigated from rivers running down from the mountains. The irrigation systems require coordination among farmers, who share the irrigation and drainage channels as well as the available water. Traditionally, Japan's rice areas have been worked by many small households that cooperated extensively.

In the early 1950s, a thorough land reform divided the rice-growing area into millions of smallholdings, each

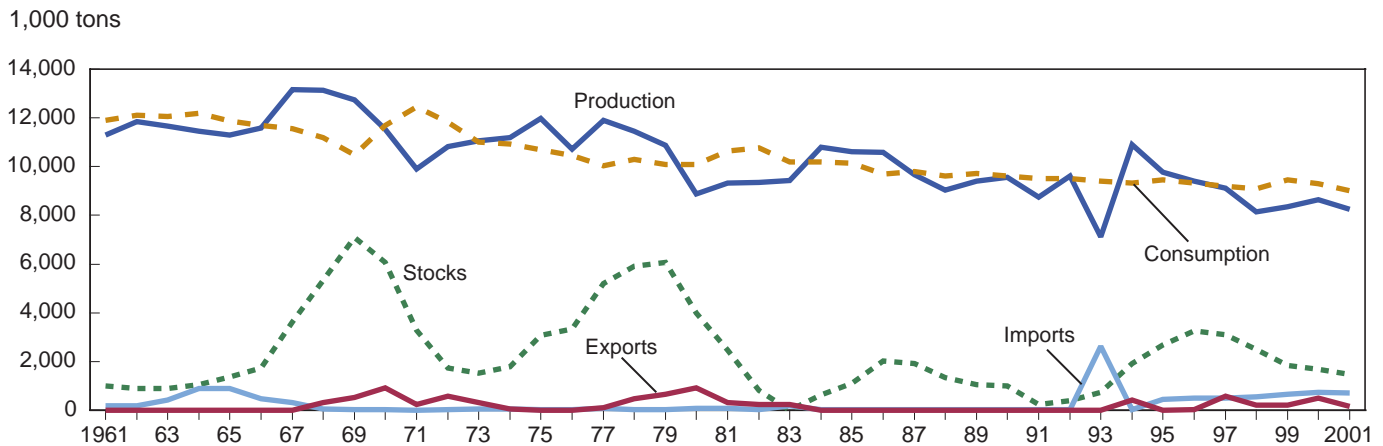
less than 3 hectares (ha) in size. Many households that had rented from large landowners received their own land during the reform, and felt that the new, small-scale land tenure system was fair and needed to be defended. However, in the succeeding 50 years, Japan's economy has changed so that the income from farming less than 3 ha of rice is dwarfed by other income opportunities. Farmers have shifted to off-farm employment, and rice cultivation has become a part-time household activity for most farms.

Total rice consumption has been falling since the 1970s. In the last half of the 20th century, Japan's consumers greatly increased the variety of foods that they ate, and other foods were substituted for rice. Because Japan's government has heavily subsidized rice production since the 1970s, at the same time that consumption was falling, output has sometimes exceeded demand (fig. 1), and subsequent high stocks have prompted export and food donation programs, as well as land diversion from rice to other crops.

Japan's government has resisted rice imports for over 30 years. At the conclusion of the Uruguay Round (UR) of global trade negotiations in 1995, Japan agreed to a quota on rice imports that now brings 682,000 tons of rice into the country annually.² However, most of this rice is not released directly into Japan's market. Instead,

² Milled basis.

Figure 1
Japan: Rice production, consumption, stocks, and trade



Source: PS&D, Feb. 2003.

imported rice often remains in government stocks until it is released as food aid to developing countries or sold as an input to food processors.

It is now evident that Japan's rice farm structure will have to evolve to a larger scale. Japan's rural areas are losing population and the farm owners are aging. Even on a part-time basis, they cannot continue operating all of Japan's small farms. Private-sector initiatives, such as custom, contract, and cooperative farming, and public initiatives to consolidate rice paddies into larger fields, are widespread. All these initiatives seek to reduce the amount of labor and the number of small machines needed in rice farming, in order to cut costs. However, land ownership has not changed much.

Households are reluctant to sell the smallholdings they received during the land reform. The establishment of larger and fewer farm operations requires the consent of many landowners, and can be a difficult task.

The longstanding cooperation among farmers is still reflected in strong rural communities in which an individual farmer's actions are weighed against the welfare of the rest of the farmers. This can make it difficult to assemble a large farm operation and difficult to design government policies that support both small landowners and large farmers. Japan's rice policies have changed in the last decade and are likely to change again as the society struggles to transform its small-scale land holdings into more efficient farms.

Domestic policies

Japan's government has introduced new policies for rice farming in the last 5 years, and relinquished some control over rice marketing in the 1990s. Nevertheless, government subsidies to rice production remain high. In 1999, the last year for which detailed information is available, government spending in support of rice production was at least 206 billion yen (\$1.82 billion) (table 1). In addition, the government spent about 120 billion yen (\$1 billion) in payments to divert rice paddies out of rice production (table 1). Additional expenses include the stockpiling of rice and subsidizing rice used in school lunch programs, as well as research and farmer pension expenditures. The total burden of domestic rice policies on taxpayers is likely to be over \$2.8 billion per year. This amounts to expenditures of over \$340 per ton of milled rice produced (using 1999 as a typical year).

In the late 1990s, Japan's government ended years of regulation over the marketing of rice. Farmers are now free to choose any marketing channel, and wholesale and retail marketing of rice is largely free of government supervision and licensing requirements.³ In recent years, retail prices of rice in Japan have fallen, perhaps in part because of the increased wholesale and retail competition that has accompanied the deregulation of marketing.

Compensation for declines in producer prices. The government offers support to farmers' income from

³ See Wailes et al. for a discussion of the earlier marketing system.

rice through a program that compensates for part of the loss in case market prices fall below a historical average price. In 1999, the last year for which data are available, payments made under the Rice Farming Income Stabilization Program were 92.7 billion yen, about \$815 million.

The Rice Farming Income Stabilization Program began in 1998. Under this program, there is no intervention to support market rice prices. However, rice farmers are compensated when the market price in a crop year falls below a standard price, which is calculated as the moving average market price of preceding years. In 2002, the standard price calculation was changed to reflect the previous 7 years, with the highest and lowest prices removed from the calculation.⁴ If current-year market prices fall below the standard price, producers can collect 80 percent of the difference between the current-year price and the standard price, multiplied times current production. The money comes from the Rice Farming Income Stabilization Fund, filled by contributions from participating farmers (2 percent of the standard rice price times their output volume) and the government (6 percent of the standard rice price times national output volume) each year.

Participation in the Income Stabilization Program is voluntary, and some farmers have chosen not to participate. To get the full benefits, participating farmers are required to join the current Production Adjustment

⁴ From 1998-2002, the standard price had been the average of the previous 3 years' market prices.

Table 1—Japanese government expenditures in support of rice farming, 1999

	Billion yen	Million U.S.\$
Direct expenditures in support of rice production		
Rice farming income stabilization program	92.7	815
Interest concessions for variable inputs	35.791	315
Insurance premiums	24.209	213
Extension services	4.56	40
Onfarm investments	49.12	432
Total	206.38	1,815
Related program:		
Production Adjustment Promotion Program (diversion program)	116.7	1,026
Total of direct and related programs	323.08	2,842

Sources: WTO; OECD; NAIA.

Promotion Program (PAPP), which diverts some of their paddy land away from rice.⁵ Thus, a farmer diverting a paddy field to another crop receives the revenue from selling that crop, plus the diversion payment (see *Rice diversion policies*, below) and the right to be eligible for income stabilization payments based on the farm's remaining rice production. Japan notified the WTO that the Income Stabilization Program was a "blue box" policy—where payments to farmers are linked to output-limiting measures, such as the diversion requirement (see [How Japan Notifies Its Domestic Policies on Rice to the WTO](#)).

Rice diversion policies. In 2001, diversion payments were 193.1 billion yen (\$1.60 billion), and the area diverted was 1,010,000 hectares, over a third of total paddy area (table 2). Payments averaged about \$1,580 per hectare diverted.

Japan has had difficulties with surplus production since the 1960s. Because of its climate and land base for rice paddies, Japan is well suited for growing rice. However, until the 1950s, Japan's large population consumed more rice than the country could consistently produce. As society changed in the course of recovery from World War II and national income rose, rice consumption per person began a fall in 1963, a trend that has continued until the present time.

As rice consumption dropped, Japan's government sought to raise the incomes of the many households raising rice. The government ceased rice imports and took other steps, such as purchases, to raise the domestic producer price of rice. Farmers responded with higher production, leading to rising government stocks. Measures such as exporting the rice into the world market or using it for feed proved expensive and faced opposition from other countries, whose exports of rice or feedgrains were hurt by Japan's actions. Thus, in 1971 Japan turned to supply control measures that have remained in effect through the present.

Diversion has been administered under five different plans since 1971.⁶ The current plan, PAPP, was started in 1998. Under it, the Ministry of Agriculture, Forestry and Fisheries (MAFF) determines adjustments to rice paddy area needed to bring supply and demand into

⁵ Full benefits from the Rice Income Stabilization Program are available only to farmers who are also participating in the Production Adjustment Promotion Program. Reduced benefits are available to other farmers.

⁶ See Wailes et al. for details on earlier plans.

Table 2—Rice area diverted and the level of diversion payments, 1971-2001

Year	Area	Payments
	1,000 ha	Billion yen
1971	547	172.5
1972	520	181.2
1973	498	180.9
1974	325	115.0
1975	244	95.0
1976	215	77.1
1977	215	94.0
1978	391	260.7
1979	391	224.8
1980	535	299.6
1981	631	358.1
1982	631	361.1
1983	600	340.7
1984	600	252.3
1985	574	223.7
1986	600	235.0
1987	770	197.9
1988	770	198.0
1989	770	189.6
1990	830	169.4
1991	830	168.2
1992	700	142.6
1993	676	100.4
1994	600	74.0
1995	680	88.4
1996	787	139.7
1997	787	140.1
1998	963	122.6
1999	963	123.7 ¹
2000	963	152.2
2001	1,010	193.1

Source: FAS/Tokyo.

¹The number for 1999 is larger than the 116.7 billion yen reported to the WTO. The discrepancy may reflect expenditures in a related program to promote feed stuff production.

balance. Farmers are offered payments if they use paddy land for certain purposes other than growing rice for food use. Per hectare payments from the government (revised annually) vary according to the use made of diverted land. Payments for various crop alternatives have also varied over time (payments for selected crops are presented in table 3). The main source of funds for the diversion payments is the national budget. However, farmers participating in the PAPP are required to pay 4,000 yen (\$33) per 10 ares⁷ for the land kept in rice into a mutual compensation fund. Table 4 shows the choices that farmers were

⁷ An are is one hundredth of a hectare. Because of the small size of farms, many policies are defined on the basis of 10 ares, which is equivalent to one-tenth of a hectare, or about one-quarter of an acre.

How Japan Notifies Its Domestic Policies on Rice to the WTO

Policy	Box	Justification
Construction of irrigation/drainage facilities and rural roads; land consolidation	Green	Infrastructural services for agricultural sector.
Interest concessions for agricultural loans	Green	Structural adjustment assistance.
Compensation to producers for market price declines	Blue	Payments based on 85% or less of the base level of production. ¹
Rice diversion payments	Green	Environmental payments: for maintaining paddy fields in environmentally good condition through growing any plants other than rice.
Disaster insurance subsidies	Green and amber ²	Green: payments for relief from natural disasters: subsidies on premiums of agricultural insurance for production loss more than 30% of average levels. Amber: subsidies on premiums of agricultural insurance for production loss less than 30% of average levels.

¹ Further justification is given in a notification by Japan to the WTO, G/AG/N/JPN/62, March 1, 2001.

² Premium payments for insurance coverage for losses less than 30 percent for all commodities (not just rice) were 22.2 billion yen (\$195 million) in 1999, which was 0.2 percent of the value of Japan's total agricultural output, and thus considered de minimis and not counted as part of Japan's total Aggregate Measurement of Support because the payments were less than 5 percent of the value of production.

Source: Notification concerning domestic support commitments reported by the Government of Japan to the WTO for fiscal year 1999, G/AG/N/JPN/72, Feb. 19, 2002.

Table 3—Diversion payments by crop, 1971-2001

Year	Wheat, barley soybeans, forage	Vegetables	Long-life crop (fruit orchard)
	Yen/10 ares ¹		
1971 - /75	40,000	40,000	40,000
1976 - 77	50,000	47,000	47,000
1978 - 83	70,000	50,000	70,000
1984 - 86	62,000	42,000	70,000
1987 - 89	50,000	17,000	55,000
1990 - 92	50,000	19,000	55,000
1993 - 95	50,000	19,000	37,000
1996 - 97	50,000	26,000	39,000
1998 - 99	50,000	11,000	30,000
2000	73,000	13,000	13,000
2001	83,000	13,000	15,000

Notes: Payments shown are the maximum payments under the various programs.

¹ 10 ares are equivalent to 0.1 hectare or 0.25 acre.

Source: FAS/Tokyo.

offered in 2001, and [How Diversion Payments Are Calculated](#) explains how the diversion subsidies vary according to the land use chosen.

Some of the diversion program alternatives involve keeping the paddy planted in rice, but not harvesting the rice for grain for human consumption. Payments for these options are given in table 4.

- Rice can be planted and fed to animals as fodder (the whole plant is used as feed).
- Rice can be cut and the whole plant fermented for use as cattle feed (fermented fodder).
- Rice can be cut and used as straw.
- Rice grains can be harvested and fed to animals (feed rice).
- Rice (and other) plants can be plowed under the soil as green manure.

Table 4—Diversion payments, 2001

Payments	Commodities							
	Wheat, barley, soybeans	"Green cut" rice	Fodder, fermented rice plant fodder, straw	Pulses, buckwheat, feed rice, rapeseed, rush, green manure	Tobacco	Perennial crop, adjusted paddies ²	Vegetables, konyakku	Paddies preserved for scenery
	Yen/10 ares							
Basic subsidy	40,000	20,000	40,000	20,000				
Bonus if area commitment is met	3,000	3,000	3,000	3,000	3,000		3,000	
High-utilization paddies ¹	10,000		10,000					
Mutual fund compensation	20,000	20,000	20,000	20,000	10,000	10,000	10,000	
Additional subsidy to reduce rice crop size by 250,000 tons	10,000	40,000			10,000	5,000		10,000
Maximum total payment	83,000	83,000	73,000	43,000	23,000	15,000	13,000	10,000
	U.S. dollars/acre							
Maximum total payment	2,778	2,778	2,443	1,439	770	502	435	335

Notes: 10 ares=0.25 acres. In 2001, 1 U.S. dollar = 120.96 yen.

¹ Applied if the field is double-cropped.

² Subsidies are reduced by 1/3 to 2/3 for adjusted (consolidated) paddies.

Source: FAS/Tokyo.

Two other alternatives allow harvesting rice for human consumption, but with adjustments to farming structure that might not otherwise be made.

- Paddies that are adjusted for greater efficiency can get a partial diversion subsidy. This rewards changes that make fields easier to cultivate.
- Rice can be grown for scenic purposes. Some scenic rice plots have low yields and might otherwise be abandoned in favor of more productive activities.

In its annual accounting of agricultural policies to the WTO, Japan places the diversion payments in the "green box," where they are not subject to any upper limit or to reduction over time. Use of the "green box" is justified, according to MAFF, by the preservation of Japan's paddies in an environmentally useful condition. Planting of other crops is regarded as necessary to maintain the environmental benefits of the paddies. However, the diversion payments clearly subsidize the

planting of other crops for which MAFF seeks greater domestic production.

Because the diversion is on an area basis and is voluntary, the program does not offer complete protection against overproduction of rice. If yields are higher than expected, Japan's farms can still flood the market with more rice than planned for—a situation that has occurred several times. Proposals have been made to base the rice diversion policy on volume, rather than area. (See FAS GAIN report JA3012, "Japan's Proposed Rice Reforms," for more information.)

Insurance. In 1999, the Japanese government paid 24.2 billion yen (\$213 million) in insurance premium subsidies for rice.⁸ About 89 percent of rice area was insured,⁹ and about 280,000 farmers were paid claims,

⁸ National Agricultural Insurance Association, p. 53.

⁹ National Agricultural Insurance Association, p. 53 and MAFF, Monthly Statistics, March 2002, p. 9.

How Diversion Payments Are Calculated

Consider a farm with 1 hectare of rice paddies, with 30 ares being diverted and 70 ares kept in rice. These examples illustrate how the diversion payments work:

1) If wheat is produced on the 30 diverted ares, then the farm receives a base subsidy of 120,000 yen ($40,000 \times 3$). If the surrounding area meets its rice diversion quota, a payment of 9,000 yen also accrues to the farm ($3,000 \times 3$). In the case of wheat double-cropped with wheat or another non-rice crop, a further 30,000 yen would be received ($10,000 \times 3$). The mutual compensation fund would contribute another 60,000 yen ($20,000 \times 3$). A special payment of 30,000 yen ($10,000 \times 3$) applied in 2001. The maximum payment for wheat would have been 249,000 yen (\$2,059) for diverting 30 ares. For an acre of land, this would be \$2,778.

2) If tobacco is grown on the 30 ares, the farm receives 9,000 yen ($3,000 \times 3$) if the surrounding-area quota is met; 30,000 yen

from the mutual compensation fund ($10,000 \times 3$); and a special payment of 30,000 yen ($10,000 \times 3$) in 2001. The maximum payment would be 69,000 yen (\$570).

3) If a perennial crop, such as an orchard, is planted to the diverted 30 ares, the farm receives 30,000 yen from the mutual compensation fund ($10,000 \times 3$). In 2001, a special payment of 15,000 yen ($5,000 \times 3$) was also available. The maximum total payment was 45,000 yen (\$372).

4) If vegetables are produced on the 30 diverted ares, then the farm receives 9,000 yen ($3,000 \times 3$) if the area as a whole achieves the diversion quota, in addition to 30,000 yen ($10,000 \times 3$) from the mutual fund compensation. The maximum total payment would be 39,000 yen (\$322).

In all these cases, if rice is planted on 70 ares and 30 ares are diverted, the farm pays 28,000 yen ($4,000 \times 7$, equivalent to \$231) into the mutual fund.

with the indemnity amounting to 21.75 billion yen (\$191 million).

Rice farmers are eligible for insurance against yield losses, except those caused by farmer negligence. The insurance is part of a national system that includes a local level (a municipality or insurance association), and prefectural and national levels. Normally, the local level indemnifies rice farmers for losses, drawing on premiums that are split evenly by farmers and the national government. If losses overwhelm local funds, additional indemnity is fully paid by the national and prefectural agricultural insurance agencies, with general budget funds if necessary.¹⁰

Rice farmers can choose coverage for individual plots or their entire rice farming operation. In the case of plot coverage, indemnities are paid when losses are greater than 30 percent of a predetermined yield. For rice farm coverage, farmers can choose to be insured against yield losses greater than either 10 percent or 20 percent of the standard yield, applied to the output of

all the farm plots. Farmers can choose how much, in yen per kilogram (yen/kg), they wish to be indemnified for each kilogram of lost output.

The premium is determined by multiplying a premium rate times the coverage amount. For example, if a farmer wants a rice plot to be covered for 220 yen/kg, the premium per kilogram is 2.846 percent times 220, or 6.26 yen/kg. This is multiplied by the standard yield to get the plot insurance premium. Given the 1999 national average standard yield of 510 kg per one-tenth hectare, insurance in the example above would cost 3,193 yen (\$28.08) for a tenth of a hectare, or 31,930 yen for a hectare (\$280.80 per hectare or \$114 per acre). This premium is then split between the farmer and the national government.¹¹

The insurance policy also covers extra precautionary expenses (e.g., applying fungicides) farmers take when MAFF declares that they are advisable. For example, if MAFF officially alerts farmers in a region to a danger from a specific disease, and advises that farmers

¹⁰ National Agricultural Insurance Association, pp. 9-12.

¹¹ National Agricultural Insurance Association, pp. 7-8.

should apply a pesticide, costs of the pesticide and its application can be covered by the insurance policy, in addition to the indemnity for yield loss.¹²

Government subsidies for crop insurance are accounted for in the “green box” when coverage is only for production loss greater than 30 percent of production (i.e., the plot coverage described above). When coverage is also given for losses under 30 percent (i.e., the whole farm coverage described above), WTO rules place government premium subsidies for such coverage into the “amber box,” because the premium subsidies are considered to encourage greater production by lowering the risk of income loss from weather or disease setbacks. In 1999, the last year with data available, Japan spent 22.2 billion yen (\$195 million) on government subsidies for insurance premiums that fit the amber box definition.¹³ The portion of this spent on rice farm insurance premiums is not known, but is likely to be substantial.

Subsidies for restructuring rice farming. Large paddies, laid out for easy use by a few large machines, can be farmed with less labor than smaller paddies.

However, land reform in the 1950s and subsequent legislation kept land ownership in agriculture below 3 ha (7.4 acres) per household. Individual rice paddies were often much smaller. The small size of paddies and the rising cost of labor led to widespread farm investment in small machines as a way to substitute for labor use. Since the 1980s, MAFF has sought to change the structure of rice farming in ways that would use less labor and, on balance, less spending on machines, as a few large machines replace many small ones.

Restrictions on ownership of more than 3 ha of land have been lifted, and restrictions on renting land (originally designed to thwart the return of landlord dominance over tenant farmers) have been eased.

Nevertheless, sales of rice land are relatively infrequent and adjustments through rentals and other arrangements have not been sufficient to clear the way for large-scale farming.

Despite the limitations to market transfers of land, Japan has succeeded in changing the rice farming landscape so that paddy fields of one-half or 1 hectare are now common. However, such changes are expen-

sive. Consolidating a large paddy almost always requires the cooperation of more than one landowner. Physically, irrigation and drainage infrastructure must be changed, and roads adjusted.

Various funds have been used to pay for much of the adjustment and compensate households when a small plot is made part of a large paddy. Land trades are a possibility, but actual sale of land is uncommon, so the ownership of a restructured large field is sometimes divided among several households, and compensation goes to households who agree to the restructuring and thereby lose their physical ability to farm the land by themselves. Physical restructuring is paid for primarily by the national government. Interest rate subsidies are available for larger scale farmers to purchase big tractors, harvesters, and other equipment.

Loans are available for cooperative ventures in which a single firm operates the land on behalf of a large number of households that formerly farmed rice. In 2001, 74 billion yen (\$616 million) was budgeted for the establishment of high-productivity rice paddy field farming. A budget of 377 billion yen (\$3.12 billion) was allotted for agricultural infrastructure construction and improvement programs,¹⁴ much of it for physical restructuring of rice land.¹⁵ Such expenditures have been sustained each year since 1995.

Aggregate Measurement of Support and Producer Support Estimate. Each year, Japan’s government calculates the Aggregate Measurement of Support (AMS) to satisfy the WTO requirement that Japan report its domestic support for agriculture. The Organisation of Economic Cooperation and Development (OECD) calculates the Producer Support Estimate (PSE) each year to estimate Japan’s government support for agriculture (fig. 2).

These international estimates of support to farming in Japan indicate the distortions caused by Japan’s policies. The AMS is regarded as an indicator of domestic support and the PSE is intended to measure domestic and border support. In both indicators, however, it is difficult to isolate the effects of domestic support from border support. In 1997, Japan calculated the rice AMS as 2.398 trillion yen (\$19.82 billion).

¹² National Agricultural Insurance Association, p. 11.

¹³ World Trade Organization (Japan’s notification to the WTO of agricultural policies in 1999, document G/AG/N/JPN/72).

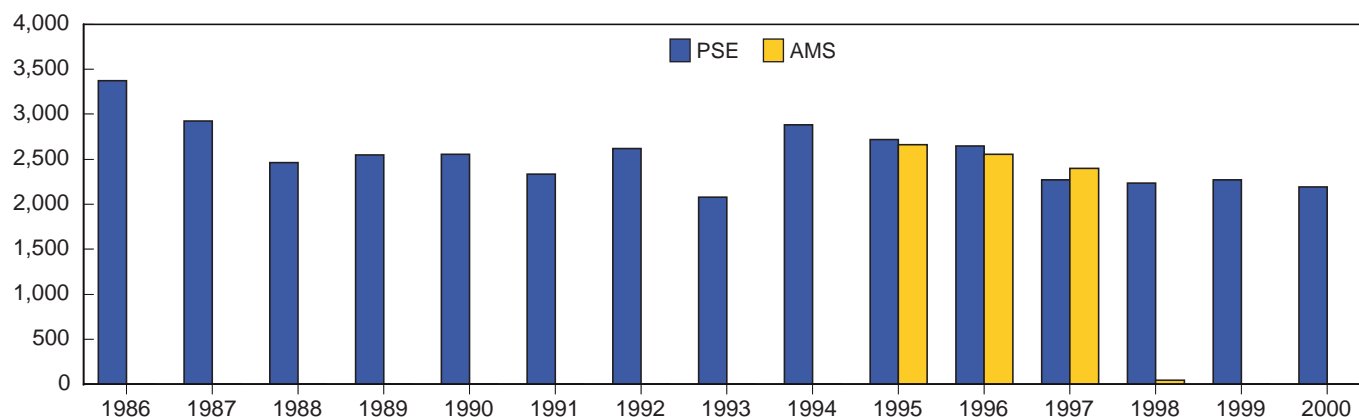
¹⁴ MAFF, Statistical Yearbook, 1999-2000, p. 741.

¹⁵ The OECD estimated that onfarm investment subsidies for rice were \$432 million in 1999, and that interest concessions for variable inputs were \$315 million.

Figure 2

Japan: Producer Support Estimate (PSE) and Aggregate Measurement of Support (AMS) for rice¹

Billion yen



¹The OECD calculates the PSE to measure government support to rice. Japan notifies the AMS to the WTO to measure trade-distorting government support, as required by the Uruguay Round Agreement (1995). After 1997, Japan's policies changed and the AMS for rice disappeared.

Sources: WTO and OECD.

Constituting 75 percent of the total AMS, this was the largest commodity subsidy reported by Japan in 1995-97.¹⁶ The OECD's PSE estimate for rice was 2.267 trillion yen (\$18.74 billion) in 1997 and 2.193 trillion yen (\$20.42 billion) in 2000.¹⁷

The methodologies used for the AMS and PSE differ, but, until 1998, both indicators were mainly based on the concept of market price support. Japan annually sets a government purchase price for rice. Until 1998, the government purchased a certain quantity annually from farmers at the predetermined purchase price. Only farmers who cooperated with the rice diversion plans were eligible to sell to the government. The government purchase was free of most risk, and rice quality considerations were not as important as in the private market. In practice, the government often lost money on the purchases because storage and administration costs, added to the purchase price, exceeded the price MAFF's Food Agency could obtain when it sold the rice in the market. Therefore, the purchases constituted a subsidy to farmers, who got a better price with less risk than they would have on the open market. However, the subsidy amounted to only a fraction of

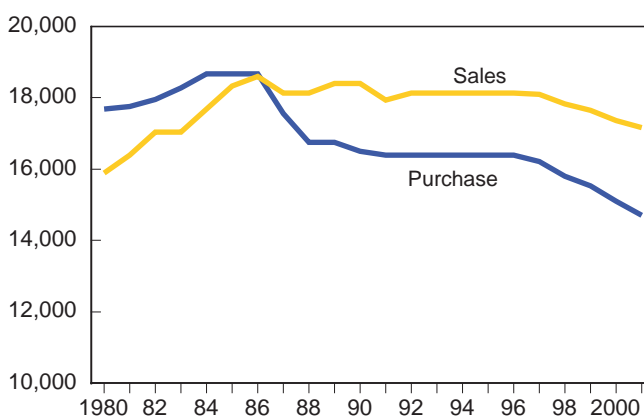
the unit value of rice in Japan, and has been declining, on a per unit basis, as the margin between the government sales and purchase prices has widened (fig. 3).

Nevertheless, because Japan did have an administered market price (the government purchase price) for rice, both Japan and the OECD based their estimates of support on this price. Both calculated the value of the market price support as the difference between the adminis-

Figure 3

Japan: Government purchase and sales price for rice

Yen/60 kg, brown basis



Source: MAFF, Statistical Yearbook.

¹⁶ World Trade Organization (Japan's notification to the WTO of agricultural policies in 1997, document G/AG/N/JPN/47).

¹⁷ OECD, table III, Producer Support by Commodity.

tered price and an international reference price, multiplied by total rice production.¹⁸ Because Japan's administered price was at least 7 times the reference price (fig. 4), the resulting estimate of market price support was very large. This estimate, however, primarily reflects Japan's closed market for rice, in which competition from imported rice is excluded. Thus, it actually reflects the importance of border measures (see *Border policies*) more than domestic support policies.

In 1998, Japan changed its policies and introduced the Rice Farming Income Stabilization Program (see *Compensation for declines in producer prices*). The government announced that its future rice purchases would be solely to maintain rice stocks for food security.¹⁹ Thus, the government purchase price, in the interpretation of Japan's government, was no longer a tool for market price support. The Income Stabilization Program subsidizes rice farmers, but does so without directly

¹⁸ For the international reference price, Japan used the average of the 1986-88 unit values for Thai rice imported by Japan to fill a special quota for Okinawa sake (rice wine) production. While Japan used a fixed reference price for its AMS calculations, the OECD PSE uses current annual average rice import unit values for calculation of the PSE.

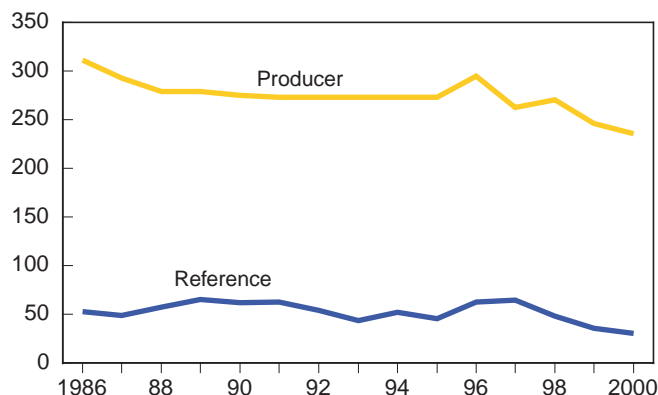
¹⁹ See ABARE, 2001, p. 77, for information on Japan's government stockpiling of rice.

²⁰ Payments of 41.9 billion yen in 1998 were less than 5 percent of the value of rice production, and therefore not counted as part of the AMS (notification to the WTO, G/AG/N/JPN/61, Feb. 28, 2001).

Figure 4

Japan: Producer and reference prices for rice¹

1,000 yen per metric ton



¹The reference price (since 1996) is the unit value of rice imported by Japan. The producer price, since 1996, is the weighted average of the prices of voluntarily marketed rice and rice purchases by the government.

Source: OECD.

affecting current market prices. In this way, the primary component of Japan's AMS for rice, market price support, ended, and the AMS was notified to the WTO as being zero in 1998 and 1999.²⁰ It is expected to remain zero in future years. The change in the AMS was dramatic (fig. 2), seemingly wiping out about \$20 billion in subsidies at one stroke, but the change to Japan's rice markets was much less important. The reason for this contradiction is that the market price support at the heart of both the AMS and the PSE was not primarily the result of domestic policies, but rather reflected limits on import competition. The PSE, which reflects both domestic and border support, continues to be high.

Border Policies

Tariffs and the tariff-rate quota. Since 1999, Japan has used a tariff-rate quota (TRQ) system for rice imports.²¹ Within the quota, the tariff is zero. However, since the MAFF Food Agency has the sole right to import rice within the quota, the tariff level is irrelevant (see *State trading and markups in the TRQ*, below). Imports outside the quota are legally possible and not subject to state trading (exclusive purchasing by the Food Agency), but are effectively prohibited by the high tariff applied to them: 341 yen/kg, equivalent to \$2,819/ton in 2001.²² The tariff for imports outside the quota was calculated by Japan's government as the tariff equivalent to the nontariff barriers that protected Japan's rice in the 1986-88 base period used by the UR negotiations.²³ Tariffs for rice and rice products are shown in table 5. Over 100,000 tons of rice-based preparations, worth over \$70 million, were imported in 2001 in categories not subject to the quota (table 5).

Japan's import quota for rice and rice products is 682,000 tons per year, on a milled rice equivalent basis. This represents 7.2 percent of average consumption in the 1986-88 base period.

State trading and markups in the TRQ. MAFF's Food Agency has the exclusive right to import rice into Japan within the TRQ. This includes not only unmilled and milled rice, but also rice flour and other rice products, and food products that contain more than 30 percent rice by weight. For imports within the quota, the Food Agency can collect a markup of up to 292 yen/kg (\$2.41/kg in 2001).

²¹ See Dyck et al. on the transition from the previous quota to the TRQ.

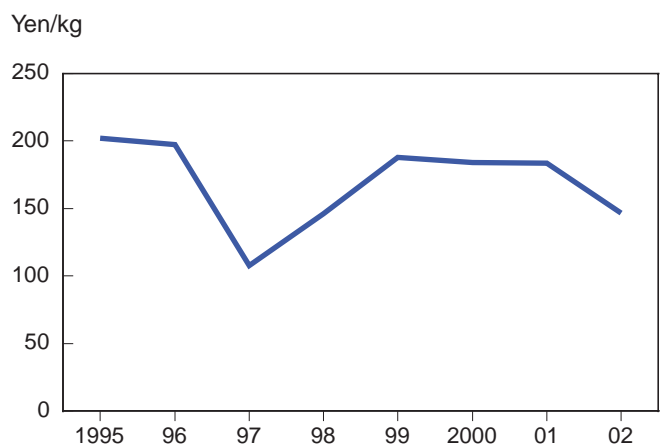
²² Compared with an average import value of 38.17 yen/kg for semi-milled or fully milled rice in calendar year 2001 (within the quota), this would have been equivalent to a tariff of 793 percent. The import unit value, in yen, of rice imported by Japan varies according to foreign country prices and the exchange rate of the yen. The percent equivalent of the 341-yen tariff thus also varies year to year. In 1998, it would have been 369 percent.

²³ A tariff was calculated according to the attachment to Annex 5 of the UR Agreement, which involves using the difference between an internal and an external price in the 1986-88 period as the tariff equivalent. The tariff equivalent was reduced by 15 percent, to 341 yen/kg, to satisfy the UR requirements.

In practice, the actual markup varies. Most imported rice is delivered to Food Agency stocks. This is known as the Ordinary Market Access (OMA) portion of the quota (table 6). Later, this rice is either sold into Japan's market or donated as food aid. In those cases where the sale value to the Food Agency is greater than its purchase price, the Food Agency has discretion to add a markup, as long as it does not exceed 292 yen/kg. The markup is very important in the remaining portion of the quota that the Food Agency designates as a Simultaneous-Buy-Sell (SBS) component.

Under the SBS system, the Food Agency conducts a kind of auction. Prospective importing firms specify what the markup (the difference between the price at which they sell the rice to the Food Agency and the price at which they later buy it back from the Food Agency) will be, as well as the quantity and type of rice involved. The Food Agency selects those bids that maximize its markup, as long as the markup does not exceed 292 yen/kg. In practice, the markup has always been below 292 yen since mid-1995. The markups vary by type of rice. For the imported rice that is closest in quality to Japanese table rice—short-grain, milled nonglutinous rice—the markup has ranged from 100 to 200 yen/kg (fig. 5), and between \$1,000 and \$2,000 per ton. In fiscal year 2001, the SBS portion of the quota was 100,000 tons (down from earlier years—see table 6).

Figure 5
Markups on short-grain rice imports



Note: Milled, nonglutinous.

Source: USA Rice Federation, Tokyo Office.

Table 5—Japan: Rice sector tariffs and imports, 2001

	Tariffs		Imports		
	Specific	Ad valorem	Volume	Value	
	Yen/kg	Percent	Tons	Bil. yen	Mil. US\$
Rice ¹	341	0	645,675	23.786	196.650
Rice bran		0	708	0.027	0.223
Rice flour, groats, and pellets ¹	375	25	968	0.064	0.529
Rolled and other worked rice ¹	341	25	0	0	0.000
Rice bran oil	8.5 ²		10,114	0.499	4.125
Rice mixes and doughs ¹	375	25	0	0	0.000
Rice preparations from swelling or roasting	341	19.2	5	0.003	0.025
Rice flour preparation in containers of of 0.5 kg or less		16	68,165	5.373	44.421
Rice flour preparations containing added sugar		23.8	36,585	2.617	21.636
Mochi rice cake containing less than 30 percent rice and no added sugar		16	1,992	0.58	4.795
Mochi rice cake containing less than 30 percent rice and less than 15 percent sucrose		24	208	0.041	0.339
Mochi rice cake containing less than 30 percent rice and over 15 percent sucrose		25	121	0.056	0.463
Mochi rice cake containing more than 30 percent rice ¹	341	25	22	0.006	0.050
Other rice prepared foods ¹	341	25	1,148	0.179	1.480
Japanese rice biscuits		29.8 ³	6,457	2.703	22.347
Sake	70.4 ⁴		2,407 ⁵	0.301	2.489
Food preparations containing more than 30 percent rice ¹	341	25	25	0.488	4.035
Subtotal				36.723	303.606

Notes: Highlighted rows are included in the overall rice quota. This should not be regarded as an authoritative listing. For that, check the Customs Tariff Schedules of Japan.

¹ Imports are subject to the rice tariff-rate quota (682,000 tons). The tariff within the quota is the ad valorem amount. The tariff on imports over the quota is the specific amount.

² For crude oil with an acid value exceeding 0.6, the tariff is 8.5 yen/kg for imports from developed countries, 5 yen/kg from developing countries, and 0 from least-developed countries.

³ If the biscuits contain added sugar, the tariff is 34 percent.

⁴ Yen per liter. The tariff on sake imports from developing countries is 0.

⁵ Thousand liters.

Source: Customs Tariff Schedules of Japan, 2002; Japan Trade Statistics.

Table 6—Results of Japan's minimum-access rice tenders, 1995-2001

		U.S.	Thailand	Australia	China	Others	Total
1995	SBS, metric tons	5,715	246	1,935	2,390	408	10,694
	Share, %	53.4	2.3	18.1	22.3	3.8	100
	OMA, metric tons	188,000	95,100	85,000	30,000	0	398,100
	Share, %	47.2	23.9	21.4	7.5	0.0	100
	Total, metric tons	193,768	95,348	86,953	32,412	412	408,894
Share, %	47.4	23.3	21.3	7.9	0.1	100	
1996	SBS, metric tons	14,134	360	1,173	5,113	1,220	22,000
	Share, %	64.2	1.6	5.3	23.2	5.5	100
	OMA, metric tons	201,000	127,650	80,000	35,000	0	443,650
	Share, %	45.3	28.8	18.0	7.9	0.0	100
	Total, metric tons	215,198	128,012	81,178	40,136	1,226	465,750
Share, %	46.2	27.5	17.4	8.6	0.3	100	
1997	SBS, metric tons	34,657	911	3,159	13,882	2,532	55,141
	Share, %	62.9	1.7	5.7	25.2	4.6	100
	OMA, metric tons	237,900	133,900	82,400	30,000	5,000	489,200
	Share, %	48.6	27.4	16.8	6.1	1.0	100
	Total, metric tons	272,620	134,813	85,565	43,907	7,537	544,441
Share, %	50.1	24.8	15.7	8.1	1.4	100	
1998	SBS, metric tons	36,498	5,297	14,538	61,965	1,702	120,000
	Share, %	30.4	4.4	12.1	51.6	1.4	100
	OMA, metric tons	265,400	130,000	87,000	10,000	20,000	512,400
	Share, %	51.8	25.4	17.0	2.0	3.9	100
	Total, metric tons	301,928	135,301	101,550	72,017	21,703	632,500
Share, %	47.7	21.4	16.1	11.4	3.4	100	
1999	SBS, metric tons	36,826	3,753	14,587	62,611	2,223	120,000
	Share, %	30.7	3.1	12.2	52.2	1.9	100
	OMA, metric tons	276,000	138,200	90,000	13,900	15,000	533,100
	Share, %	51.8	25.9	16.9	2.6	2.8	100
	Total, metric tons	312,857	141,956	104,599	76,563	17,225	653,200
Share, %	47.9	21.7	16.0	11.7	2.6	100	
2000	SBS, metric tons	46,273	4,960	14,269	53,264	1,234	120,000
	Share, %	38.6	4.1	11.9	44.4	1.0	100
	OMA, metric tons	284,000	144,370	94,000	35,000	15,669	573,039
	Share, %	49.6	25.2	16.4	6.1	2.7	100
	Total, metric tons	330,312	149,334	108,281	88,308	16,904	693,139
Share, %	47.7	21.5	15.6	12.7	2.4	100	
2001	SBS, metric tons	25,173	421	8,529	65,702	175	100,000
	Share, %	25.2	0.4	8.5	65.7	0.2	100
	OMA, metric tons	298,877	129,376	91,500	55,516	4,700	579,969
	Share, %	51.5	22.3	15.8	9.6	0.8	100
	Total, metric tons	324,075	129,797	100,038	121,284	4,875	680,069
Share, %	47.7	19.1	14.7	17.8	0.7	100	

Notes: OMA=Ordinary Market Access portion of the quota; SBS=Simultaneous-Buy-Sell portion of the quota.

Source: FAS/Tokyo.

Policy Implications

Prices. By isolating its markets from world rice markets, Japan's policies have caused domestic prices to be higher than they would be given free trade. Within its isolated national market, Japan's rice area diversion policy has further restricted supply to keep prices higher. Higher prices have affected both supply and demand.

Japan's farmers produce japonica rice, a round grain rice with low amylose starch content. Other producing regions are Korea, Taiwan, northern China, California, and New South Wales (Australia). Foreign producers in all these areas produce rice at a lower price than most Japanese farmers. In recent years, typical prices received by Japan's producers have been 60 percent higher than in South Korea and more than 10 times higher than U.S. prices (table 7). High and relatively stable prices in Japan allowed 1.15 million households to operate commercial rice farms on 2.485 million hectares in 2000. Most of these farms are small, and incur high costs when they grow rice. The small scale of farming is made economically rewarding by the very high producer prices.

Consumers pay a high price for rice. At retail, Japan's rice prices tend to be 2.5-3 times higher than U.S. prices (fig. 6), although quality and packaging differences make the comparison imprecise. Econometric estimates of Japanese consumer demand for rice show that price changes have little effect on direct food consumption. However, high prices affect processing uses of rice, encouraging substitution of other grains for

Table 7—Producer prices for japonica rice

	Year	U.S.\$/kg milled basis
Japan ¹	2000	2.63
U.S. ²	1999/2000	0.20
Taiwan	2000	0.81
South Korea	1999	1.62
Australia	1999/2000	0.20
China ³	2001	0.22

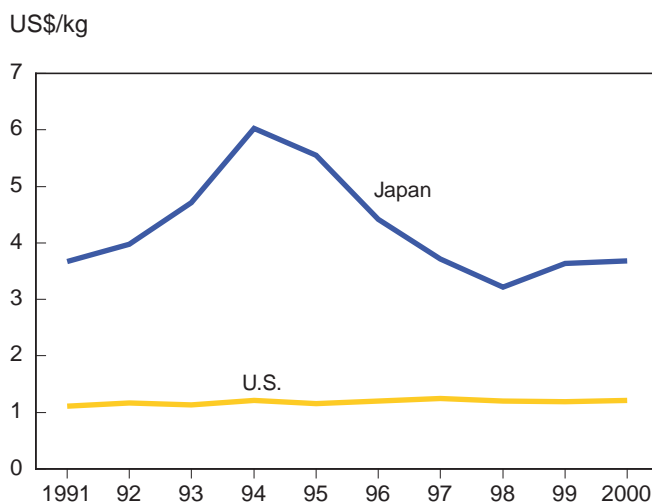
¹ Voluntarily marketed rice.

² Medium- and short-grain rice.

³ Milled grade number 1 japonica prices in producing areas.

Sources: Japan, *Monthly Statistics of Agriculture, Forestry and Fisheries*; U.S., *Rice Yearbook, 2001*; Taiwan, *Statistical Yearbook of Agriculture, 2000*; South Korea, *Agricultural and Forestry Statistical Yearbook, 2000*; Australia, *Australian Commodities*, March 2002; China, FAS GAIN report CH2010.

Figure 6
Retail rice prices



Sources: ERS; MAFF.

rice. To some extent, imports of foods and beverages that use foreign rice as an ingredient have grown as a result of the high price of Japan's own rice. This has decreased consumption of domestically produced rice, and marginally increased use of foreign rice.

Gains and losses. The high prices for rice in Japan have imposed a tax on consumers, who have paid considerably more for rice than if they could have access to rice from outside Japan. Although rice has become less important as a share of consumer expenditures, in 2000 it reflected about 1 percent of total expenditures for the average household.²⁴ Cutting rice prices in half, for example, would obviously benefit households and free up 0.5 percent of household income (\$170 per year) that could be spent on other goods or saved. Further savings could come from expenditures on meals outside the home that include rice.

As a group, rice farmers have received a subsidy from Japan's policies. Border measures have, for the most part, kept foreign rice out of competition for Japan's market. Any imported rice available to Japan's consumers is sold at a steep markup, so that price competition with Japan's domestic rice is reduced. While higher prices stemming from reduced competition have been the main subsidy to farmers, they have also benefited from the Rice Income Stabilization Program

²⁴ MAFF, *Statistical Yearbook, 1999-2000*, p. 680.

payments in recent years, from area diversion subsidies under the Production Adjustment Promotion Program, and from infrastructure and equipment subsidies. Payments under these programs are high on a per hectare basis, by international standards. However, since the typical landholding is small (averaging 1 ha), the payment per farm household is not remarkable when compared with payments per farm in Europe or North America.

Large-scale, full-time farmers have both gained from and been held back by Japan's policies.²⁵ Such farmers, with lower costs than small operators, gain extra income because of the high rice prices in Japan resulting from tight border controls. Large-scale farmers, who often farm land owned by other farmers, have also benefited from government payments that have restructured paddies to make them easier to farm and from subsidized farm equipment purchases. On the other hand, the diversion program has put pressure on large farmers to divert some land away from rice. Otherwise, neighboring farmers would have to divert more land, or a producing area would not realize its diversion target. Not meeting a target means that subsidies for farmers who do divert are lower (see *Rice diversion policies*). However, diversion is counterproductive for a farmer seeking to specialize in rice on a large scale. Land prices have also been higher because of the expectation that government subsidies will be available. High land prices make it uneconomic for a farmer to expand farm size permanently through purchasing land.

Thus, while Japan's policies make it profitable to grow rice, they have hindered structural change that could lead to lower costs. Proposals have been made to refocus the subsidies under the Rice Income Stabilization Program on larger scale, full-time farmers, with less compensation for small and part-time farmers, and to reorient the diversion program toward small and part-time farmers. (See FAS GAIN report JA3012, "Japan's Proposed Rice Reforms," for more information.)

If Japan were to eliminate government support for rice production (including tariffs), restructuring would be encouraged by sharply lower prices for rice. Farm operations would be able to use more land as small producers exited the market. Land costs, both for pur-

²⁵ See Hayami for a full discussion of the impact of policies on the structure and competitiveness of Japan's rice farming.

chase and rent, would fall, since the value of rice land to Japanese farmers would be less if prices were lower. Despite easier access to less expensive land, and the greater ability to cut labor and equipment costs on larger operations, the fall in the market price of rice would also discourage large-scale producers. In general, the land abandoned by small rice farmers might exceed expansion by larger farmers, and a price drop would lead to lower production. The degree to which Japanese rice production would contract depends on what happens in the world market, as well as on the capacity of Japan's farming to restructure itself at lower costs of production.

Greater imports by Japan would have a positive impact on world prices. Japan represents a large share of the global market for japonica rice. This market is not clearly defined, partly because barriers to trade that exist now prevent consumers from comparing various types of rice. However, short-grain japonica production and consumption have a core market area in northeast Asia: Japan, South and North Korea, Taiwan, and northeast China. In Korea and Japan, japonica rice has been the staple food for many centuries. In Taiwan, japonica rice became a staple in the 20th century, and its consumption has become more important in recent decades in northeast China. Outside this core area, rice production in California and in New South Wales, Australia, has been linked to northeast Asia. Medium-grain rice produced in California and New South Wales has been favored by South Korea and Japan when extreme production shocks (in 1980 for South Korea and in 1993 for Japan) left those countries short of rice. Other countries also produce japonica or medium-grain rice, but their ties to northeast Asia have been weaker, and the degree to which northeast Asian consumers will accept their rice is not known.

Table 8 shows recent japonica production in northeast Asia, California, and Australia. The average for 1999-2001 was about 57 million tons (milled basis).²⁶ Of this, Japan's production represented about 15 percent. In the event of a global elimination of all tariffs, rice

²⁶ Data used were from USDA's PS&D database, except for China and Taiwan. For China, an estimate of 38 million tons of japonica rice was derived from a 2000 estimate cited in Hansen et al., p. 32. For Taiwan, the data are for japonica glutinous and nonglutinous rice production, from the Agricultural Statistics Yearbook, 2001. While the data for the other areas include both glutinous and nonglutinous production, the estimate for China is only for nonglutinous production.

Table 8—Japonica rice production average, 1999-2001

	1,000 metric tons, milled basis	Proportion of total, percent
China ¹	38,164	67.3
Japan	8,409	14.8
South Korea	5,356	9.4
North Korea	1,417	2.5
Taiwan	1,171	2.1
California ²	1,203	2.1
Australia	992	1.7
Total above	56,712	

¹ Estimate for China is for 2000. Japonica glutinous rice is not included.

² Sum of medium- and short-grain production in California.

Sources: Except as noted, Foreign Agricultural Service, USDA; For China, Hansen et al., p. 32; for Taiwan, Council of Agriculture; for California, appendix table 8, p. 45, in Economic Research Service, *Rice Situation and Outlook Yearbook*.

from South Korea and Taiwan would also face full world trade competition for the first time.²⁷ Together, Japan, South Korea, and Taiwan represent about 26 percent of production shown in table 8. If these high-priced markets were opened to free trade, the impact on the world japonica market would be considerable. Either production would expand outside those three markets and exports to the three markets would rise, or, if production could not be expanded, prices for rice outside the three markets would rise. If prices outside Japan rose significantly, rice farming inside Japan could become competitive. New South Wales, California, and northeast China all face limitations on

²⁷ Sumner and Lee analyze effects on prices of the partial opening of japonica rice markets in the UR.

water supply. Thus, their capacity to expand output in the event of free trade is limited. This could mean a significant rise in prices if Japan, Korea, and Taiwan liberalize trade.

A further factor is the important japonica production in central China, in provinces near Shanghai. While there is no shortage of water, the quality of this rice is reportedly lower than japonica from northeast China.²⁸ If the assumption is made that only japonica from northeast China would be acceptable to Japanese, Korean, and Taiwanese consumers, then the impact of liberalized trade would be greater: Japan, South Korea, and Taiwan constitute about 42 percent of the japonica market in table 8 if central China's production is excluded. Without central China's production, it would be difficult to supply the full needs (15 million tons) of the three liberalizing markets. World prices would rise, and production in Japan would be more competitive.²⁹

Current negotiations about a new multilateral agreement on agricultural trade in the WTO are likely to focus on tariffs and TRQs and on domestic support, and may lead to significant changes in Japan's rice policy regime. The discussion above suggests that trade liberalization would provide significant benefits to Japan's consumers (through lower prices) and to rice producers in exporting countries (through higher prices).

²⁸ Hansen et al., p. 33.

²⁹ Cramer et al., in one of the most thorough studies of rice trade liberalization, reported model results showing that almost all of Japan's production would be displaced by imports and that world japonica prices would rise by 171 percent, given a complete, global liberalization. However, they noted that production increases required elsewhere to produce rice for Japan and Korea were not realistic (p. 21).

References

- Australian Bureau of Agricultural and Resource Economics (ABARE). March 2002. *Australian Commodities*. Vol. 9, No. 1.
- _____. 2001. *Agricultural Trade Policies in Japan: The Need for Reform*. Research report 01.5.
- _____. 1988. *Japanese Agricultural Policies: A Time for Change*. Policy monograph no. 3.
- Childs, Nathan and Linwood Hoffman. Nov. 1999. "Upcoming World Trade Organization Negotiations: Issues for the Rice Sector." *Rice Situation and Outlook Yearbook*. Economic Research Service, USDA. RCS-1999, pp. 27-32. <http://www.ers.usda.gov/publications/so/view.asp?f=field/rcs-bby/>
- Council of Agriculture [Taiwan]. 2001. *Agricultural Statistics Yearbook*.
- Cramer, Gail L., Eric J. Wailes, John M. Goroski, and Stanley S. Phillips. November 1991. *The Impact of Liberalizing Trade on the World Rice Market: A Spatial Model Including Rice Quality*. Arkansas Agricultural Experiment Station, University of Arkansas, Special Report 153.
- Dyck, John. April 2001. "Japan's Changing Agricultural Policies." *Agricultural Outlook*. Economic Research Service, USDA, pp. 14-19. <http://www.ers.usda.gov/publications/AgOutlook/April2001/AO280e.pdf>
- Dyck, John, Nathan Childs, Karen Ackerman, David Skully, and Sarah Hanson. April 1999. "Rice Tariffication in Japan: What Does It Mean for Trade?" *Agricultural Outlook*. Economic Research Service, USDA, pp. 13-16. <http://www.ers.usda.gov/publications/agoutlook/apr1999/ao260c.pdf>
- Economic Research Service, USDA. 2002. *Rice Situation and Outlook Yearbook*. RCS-2002. <http://usda.mannlib.cornell.edu/reports/erssor/field/rcs-bby/rcs2002.pdf>
- ERS/Penn State Trade Modeling Project. <http://coldfusion.aers.psu.edu/wto/>
- Foreign Agricultural Service, USDA. Grain and feed reports in the GAIN series. <http://www.fas.usda.gov/scriptsw/attacherep/default.asp>
- Hansen, James, Frank Fuller, Frederick Gale, Frederick Crook, Eric Wailes, and Michelle Moore. November 2002. "China's Japonica Rice Market: Growth and Competitiveness." *Rice Situation and Outlook Yearbook*. Economic Research Service, USDA. RCS-2002, pp. 32-7. <http://www.ers.usda.gov/publications/so/view.asp?f=field/rcs-bby/>
- Hayami, Yujiro. 1988. *Japanese Agriculture Under Siege: The Political Economy of Agricultural Policies*. New York, NY: MacMillan.
- Japan Tariff Association. 2002. *Customs Tariff Schedules of Japan*.
- Ministry of Agriculture and Forestry [Korea]. 2000. *Agricultural and Forestry Statistical Yearbook*.
- Ministry of Agriculture, Forestry and Fisheries (MAFF) [Japan]. *Monthly Statistics of Agriculture, Forestry and Fisheries*.
- _____. *Statistical Yearbook of Agriculture, Forestry and Fisheries*.
- _____. Food Agency. *An Outline of Japan's New Rice Policies*. No date.
- National Agricultural Insurance Association (NAIA), Planning and Training Department. June 2001. *The Framework of Japan's Agricultural Insurance Scheme*. Printed briefing.
- Organisation for Economic Cooperation and Development. 2002. *Agricultural Policies in OECD Countries: Monitoring and Evaluation 2002*.
- Sumner, Daniel A. and Hyunok Lee. August 2000. "Assessing the Effects of the WTO Agreement on Rice Markets: What Can We Learn from the First Five Years?" *American Journal of Agricultural Economics*, Vol. 82, No. 3, pp. 709-17.
- U.S. Department of Agriculture. Production, Supply, and Distribution database (PS&D). <http://www.fas.usda.gov/psd/>

USA Rice Federation, Tokyo office. Data on markups (unpublished).

Wailes, Eric J., Shoichi Ito, and Gail L. Cramer. February 1991. *Japan's Rice Market; Policies and Prospects for Trade Liberalization*. Arkansas

Agricultural Experiment Station, Univ. of Arkansas. Report Series 319.

World Trade Organization, Committee on Agriculture. Various years. Notifications by Japan. http://docsonline.wto.org/gen_search.asp