



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

TX

TAMRC-IM-1-90



TAMRC REPORT

MINI FOUNDATION OF
AGRICULTURAL ECONOMICS
LIBRARY

FEB 24 1992

TRADE DISTORTING POLICIES IN THE WORLD RICE MARKET:

SOME FACTORS FOR CONSIDERATION
IN TRADE NEGOTIATIONS

Warren R. Grant and Gary W. Williams*

TAMRC International Market
Research Report No. IM-1-90
November 1990

TEXAS AGRICULTURAL MARKET RESEARCH CENTER REPORT

Department of Agricultural Economics
Texas Agricultural Experiment Station
Texas Agricultural Extension Service
Texas A&M University *System*
College Station, Texas

**TRADE DISTORTING POLICIES
IN THE WORLD RICE MARKET:**

**SOME FACTORS FOR CONSIDERATION
IN TRADE NEGOTIATIONS**

Warren R. Grant and Gary W. Williams*

**TAMRC International Market
Research Report No. IM-1-90
November 1990**

* Adjunct Professor and Professor/TAMRC Coordinator, Texas Agricultural Market Research Center, Department of Agricultural Economics, Texas A&M University, College Station, Texas, November 1990.

TRADE DISTORTING POLICIES IN THE WORLD RICE MARKET: SOME FACTORS FOR CONSIDERATION IN TRADE NEGOTIATIONS

Prepared under contract for the USA Rice Council and the Rice Miller's Association. Texas Agricultural Market Research Center (TAMRC) International Market Research Report No. IM-1-90 by Warren R. Grant and Gary W. Williams, Adjunct Professor and Professor/TAMRC Coordinator, Texas Agricultural Market Research Center, Department of Agricultural Economics, Texas A&M University, November 1990.

ABSTRACT: With few exceptions and with varying degrees of comprehensiveness and success, all countries intervene in their rice markets. This intervention can create imbalances in world rice supply and demand, shift world rice trade patterns, and distort world rice prices. Available evidence suggests that the global competitiveness of the U.S. rice industry has been severely weakened by the protectionistic policies of its rice trading partners and competitors. An important part of U.S. strategic response to this problem has been to negotiate trade barrier reductions with other rice producing and consuming countries. Current attention is focused on the ongoing GATT discussions. Devising a successful negotiating strategy requires answers to several crucial questions. What are the major trade distorting policies in world rice markets? What are the implications of those policies for U.S. access to foreign rice markets? What are the key rice issues for consideration in rice trade negotiations? This study addresses these and related questions.

The Texas Agricultural Market Research Center (TAMRC) has been providing timely, unique, and professional research on a wide range of issues relating to agricultural markets and commodities of importance to Texas and the nation for more than two decades. TAMRC is a market research service of the Texas Agricultural Experiment Station and the Texas Agricultural Extension Service. The main TAMRC objective is to conduct research leading to expanded and more efficient markets for Texas and U.S. agricultural products. Major TAMRC research divisions include International Market Research, Consumer and Survey Research, Commodity Market Research, and Contemporary Market Issues Research.

EXECUTIVE SUMMARY

With few exceptions and with varying degrees of comprehensiveness and success, all countries intervene in their agricultural markets creating growing imbalances in world supply and demand, shifting world trade patterns, and distorting world prices. Protectionism in world rice markets is particularly pervasive. The U.S. strategic response to the growing protectionism in world agricultural markets has been the negotiation of trade barrier reductions with other producing and consuming countries. Current attention is focused on the ongoing GATT discussions. Devising a successful negotiating strategy particularly for rice requires answers to several crucial questions. What are the major trade distorting policies in world rice markets? What are the implications of those policies for U.S. access to foreign rice markets? What are the key rice issues for consideration in rice trade negotiations? This study addresses these and related questions.

Major Trade Distorting Policies in World Rice Markets

The policies impinging on world rice markets can be categorized as either trade restrictions or trade incentives. Both types of trade policies tend to distort world rice trade and price levels away from what they would be under free trade.

Trade Restrictions

Both importing and exporting countries impose restrictions on world rice trade. The consequences for world markets, however, are fundamentally different. If an importing country restricts the inflow of foreign rice, the consequence is lower world trade and lower world prices of rice but higher domestic prices and increased domestic rice production in the import-restricting country. Lower world trade is also a consequence if an exporting country restricts exports. However, rice prices will be higher in importing countries and export-competing countries with just the opposite the case in the export-restricting country. In either case, world rice markets tend to become more volatile. Import restricting policies include import tariffs or undervaluation of the country's currency vis-a-vis the currency of major exporting countries as well as non-tariff barriers to imports such as import quotas, variable levies, government-controlled import monopolies, and other more subtle forms of import controls. Most rice surplus countries also operate programs intended to support and protect domestic producers of agricultural products. Some of these policies may restrict the availability of supplies for export and increase the price demanded for rice in the world market. Such policies include export taxes or overvaluation of the country's currency vis-a-vis the currency of major importing countries, export quotas, government-controlled export monopolies, and other more subtle forms of export control. A number of domestic producer support and other policies such as acreage reduction programs, price supports above world price levels, and deficiency payments also work to restrict rice exports.

Trade Incentives

World trade can be distorted not only by policies that restrict trade but also by those that increase trade. Policies of exporting countries that attempt to capture a larger share of world markets for their producers may increase the volume of world trade but will also shift world trade patterns. Importing countries may choose to increase the proportion of domestic supplies of a commodity that come from foreign sources for a variety of reasons. Again, however, the consequence can be a shift in world trade patterns as well as an increase in world trade volume. If an importing country provides

an incentive for a larger inflow of foreign rice, for example, the consequence is an increase in world rice trade and price but lower domestic prices and domestic rice production in the import-enhancing country. Increased world trade may also be a consequence if an exporting country provides an incentive for greater exports. However, rice prices will be lower in importing countries and export-competing countries with just the opposite the case in the export-enhancing country. Importing country policies that stimulate imports are of less concern to exporting countries than those that restrict imports. The incidence of such policies, however, is by far much less common than that of import restricting measures. The governments of most rice exporting countries operate some type of policies that lead to higher exports of rice than would be the case in the absence of those policies. Such policies include export subsidies of various forms, undervaluation of the country's currency vis-a-vis the currency of major importing countries, or other more subtle means to stimulate exports.

Implications for U.S. Access to Foreign Rice Markets

A country-by-country and policy-by-policy review of world rice market distortions suggests strongly that trade-restricting rather than trade-expanding interventions have tended to dominate in world rice markets. The likely consequence of these policies has been a reduction in world and U.S. rice trade. Recent research to determine the magnitude and direction of impact of world rice market interventions provides evidence to support this conclusion. One recent study concludes that world rice trade is 48% lower as a result of rice policy distortions than would be the case under free trade (Cramer, *et. al.*). The study estimates that policy interventions have reduced world exports of high-quality indica rice by 15%, low-quality indica by 39%, and japonica by 83%. The study also concludes that the prices of high-quality and low-quality indica rices and of japonica rice are 25%, 5%, and 61%, respectively, lower than would occur under free trade. As a consequence, gross revenues from U.S. japonica and indica rice exports are 80% and 15%, respectively, lower than would be the case under free trade.

Together with other trade enhancing measures, the U.S. marketing loan program enacted in the 1985 Farm Bill allowed U.S. market prices of rice to fall below producer support levels, boosted the competitiveness of U.S. rice in world markets, and helped spur a rebound in the U.S. share of world rice trade from a low of 15% in 1985 to over about 20% in the late 1980s. In essence, the U.S. enacted a Farm Bill intended to retaliate against the protectionistic policies of importing and export competing countries in world rice trade. The cost, however, has been substantial. The U.S. Treasury, and ultimately U.S. taxpayers, is paying the cost of attempting to undo the effects of extensive and long-standing protectionistic acts by many other countries.

Key Rice Issues for Consideration in Rice Trade Negotiations

Although successful to some extent, U.S. rice trade expansion efforts continue to be dwarfed by the protectionistic policies of its rice trading partners and competitors. Consequently, an important part of U.S. strategy for recouping competitiveness in world markets has been to negotiate trade barrier reductions with other rice producing and consuming countries. Successful negotiations will require that special attention be paid to at least four groups of key issues: 1) targeting the specific policies of specific countries that are most highly trade distorting, 2) GATT vs. Non-GATT country issues, 3) developed vs. less developed country issues, and 4) conditions particularly characteristic of world rice markets that may require special treatment of rice in trade negotiations.

Targeting the Most Trade-Distorting Policies

Although protectionism is practiced in nearly every rice consuming and producing country in the world, several policies by key countries account for a large share of the distortions in world rice markets and, therefore, may be considered as primary targets for negotiation. The primary

exporting country policy target for negotiation is EC rice price supports. There are several specific, high priority targets for trade negotiations among importing country policies, including: 1) government monopolization of trade (state trading agencies), 2) specific direct import controls including the variable levy of the European Community, the import bans of Japan, South Korea, and Nigeria, and the import tariffs of the many smaller rice importing countries such as Japan, Bangladesh, India, Senegal, Malaysia, Indonesia, Sri Lanka, Brazil, Peru, Syria, Nigeria, Madagascar, Mexico, and the Philippines, among others, and 3) support prices and production subsidies provided to producers in the EC-12, Senegal, the Ivory Coast, Malaysia, Indonesia, the Philippines, Peru, and many other small importing countries.

GATT vs. Non-GATT Country Issues

Because as much as 40% of the rice traded on world markets is imported by countries that are not members of GATT, even if the ongoing GATT talks are successful in eliminating all policies of participating countries that affect world rice trade, a large portion of world rice trade will still be subject to trade distorting policies. Policies of U.S. export competing countries can be much more comprehensively addressed in the current GATT talks than those of rice importing countries. Consequently, the trade distorting policies of exporting countries are a key negotiation objective in the GATT talks. Significant movement to truly free trade in world rice markets will require bilateral negotiations with numerous small importing countries that are not members of GATT. Because much of the distortion in world trade is not likely to be comprehensively or successfully treated in the GATT negotiations, bilateral negotiations with many importing country GATT members will also be necessary if world rice markets are to be successfully liberalized.

LDC Rice Trading Country Issues

Many of the trade restricting policies of LDCs receive special and deferential treatment under GATT. LDCs account for nearly two-thirds of world rice imports. Only slightly more than 20% of world rice imports are by DCs with the remainder going to centrally planned economies (CPEs). If LDCs continue to receive deferential treatment, at most about 20% of world rice imports would be potentially subject to the full range of an GATT trade liberalization requirements. The trade distorting policies of rice-exporting LDCs are likely to be addressed in the current GATT negotiations. The trade distorting policies of many rice-importing countries, however, may escape adequate consideration in the ongoing GATT talks because LDCs make up a large portion of those countries not participating in GATT. At the same time LDC trade policies will likely continue to be treated deferentially in the negotiations resulting in little redress in the pattern of distortion in world rice markets. Consequently, unless the U.S. is aggressive and successful in negotiating bilateral reductions in trade barriers with a large number of LDCs, there will likely be little true liberalization of world rice markets regardless of the outcome of the GATT talks. For the developed countries, the benefits of applying GATT rules equally across all countries (including LDCs) in terms of added access to those markets must be weighed against the likely negative impacts on the stability and growth rates of the agricultural and overall macro economies of those developing countries.

Special Considerations for Rice Trade Negotiations

There are a number of characteristics peculiar to world rice markets that must be considered in designing a successful trade negotiation strategy for rice that are either of less concern or not relevant for many other commodities. The world market for rice is generally characterized as thin, unstable, and stratified (by rice type and quality). The thinness of the market results from the small volume of rice that is traded relative to world production. The instability results from the thinness of the market, highly variable weather patterns in Asia, and extensive government intervention in the market. The stratification of the market relates to the distinct types of rice produced and consumed

in the world. Different countries tend to prefer different rice types so that the markets for each rice type are substantially separated, limiting the degree of substitution that occurs among rice types in world consumption. The markets for each rice type, therefore, are even more thin and volatile than the aggregate market. The particular process chosen for liberalizing world rice trade will have a major impact on the extent to which the volatility of world rice markets is also lessened. A process which essentially allows for increased trade volumes without substantial change in the types of policies used to control trade will be highly ineffective in reducing the high degree of volatility in the world market because a large proportion of world rice trade is controlled by non-tariff barriers, such as import quotas and bans and state trading agencies. Because complete and immediate elimination of non-tariff barriers is not likely to result from current negotiations, the next best trade liberalization process for world rice markets would involve as a first step the transformation of all non-tariff barriers into their tariff equivalents, i.e., "tariffication." The next step would be a gradual reduction in tariff levels over time. The advantage of tariffication, is that not only can a greater world trade volume be achieved but also volatility in world markets can be substantially reduced. Although tariffs restrict trade, they do not increase world market volatility nor shift the burden of adjusting to volatility in the market to less protected markets like the United States as is the case with non-tariff barriers. The stratification of the world rice market also means that liberalization of world rice trade could have regional implications for the U.S. rice industry. Removal of import barriers by japonica rice consuming countries, such as Japan, South Korea, and Taiwan, would have the largest primarily affect the volume and profitability of rice production in California where japonica is the major rice variety grown. On the other hand, removal of trade barriers in the EC-12 and other indica importing countries would primarily affect rice production in southern U.S. states where indica varieties tend to dominate.

TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY.....	ii
MAJOR TRADE DISTORTING BARRIERS IN WORLD RICE MARKETS.....	1
Trade Restrictions.....	2
Trade Incentives.....	12
IMPLICATIONS FOR U.S. ACCESS TO FOREIGN RICE MARKETS.....	19
Effects of World Rice Market Distortions on U.S. Rice Exports and Price.....	19
U.S. Rice Policy: A Reaction to World Rice Market Protectionism.....	20
KEY RICE ISSUES FOR CONSIDERATION IN RICE TRADE NEGOTIATIONS.....	23
Targeting the Most Trade Distorting Policies in the World Rice Market.....	23
GATT vs. Non-GATT Country Issues.....	28
Less Developed Country Issues.....	28
Special Characteristics of World Rice Markets.....	30
SUMMARY AND CONCLUSIONS.....	33
REFERENCES.....	36

LIST OF TABLES AND FIGURES

TABLE	<u>Page</u>
1. Major World Rice Importing Countries and Their Trade Policies.....	4
2. Major World Rice Exporting Countries and Their Trade Policies.....	9
3. Impact of Liberalization on Rice Exporting Countries.....	21
4. Impact of Liberalization on Rice Importing Countries.....	22
5. World Rice Trade Handled Through Private Traders and State Trading Agencies, 1987-89.....	26
6. Rice Trade of Developed, Developing, and Centrally Planned Countries.....	29
7. Comparison of Variability in World Crops, 1961-89.....	31

FIGURE	<u>Page</u>
1. U.S. Share of World Rice Exports, 1960-89.....	24

LIST OF TABLES AND FIGURES**TABLE**

1.	Major World Rice Importing Countries and Their Trade Policies.....	36
2.	Major World Rice Exporting Countries and Their Trade Policies.....	37
3.	Impact of Liberalization on Rice Exporting Countries.....	38
4.	Impact of Liberalization on Rice Importing Countries.....	39
5.	World Rice Trade Handled Through Private Traders and State Trading Agencies, 1987-89.....	40
6.	Rice Trade of Developed, Developing, and Centrally Planned Countries.....	41
7.	Comparison of Variability in World Crops, 1961-89.....	42

FIGURE

1.	U.S. Share of World Rice Exports, 1960-89.....	43
----	--	----

TRADE DISTORTING POLICIES IN THE WORLD RICE MARKET: SOME FACTORS FOR CONSIDERATION IN TRADE NEGOTIATIONS

Warren R. Grant and Gary W. Williams

Liberalizing world trade in agricultural products is receiving greater attention in the eighth round of the multilateral trade negotiations (MTN) under the auspices of the General Agreement on Tariffs and Trade (GATT) than was the case in previous rounds. There is now greater recognition of the high and rising costs of protective barriers and domestic policies affecting trade in agricultural products. These policies insulate producers in many countries from international competition, encourage inefficient production, discourage supply adjustments, and distort world food trade and prices. Countries that attempt to protect their farm sectors through such barriers to trade are experiencing a rapid escalation in the cost of these protective measures on both consumers and taxpayers. At the same time, these protective measures discourage production in other more efficient and less protected countries through their negative impact on world prices and the added instability transferred from more highly protected markets.

What are the major trade distorting policies in world rice markets? What are the implications of those policies for U.S. access to foreign rice markets? What are the key rice issues for consideration in rice trade negotiations? This study addresses these and related questions. Following a review and analysis of the major trade distorting policies in world rice markets, the implications of those policies for the U.S. rice industry are discussed. The key issues for consideration in rice trade negotiations are then delineated followed by a summary and discussion of conclusions.

MAJOR TRADE DISTORTING BARRIERS IN THE WORLD RICE MARKET

Government intervention in rice trade and production is pervasive and contributes to the high level of observed volatility in world markets. Most Asian countries operate self-sufficiency and domestic rice price stabilization schemes and pursue stringent measures severely controlling rice trade. The rice markets in most Asian countries except possibly China and Thailand are relatively unresponsive to changes in the international price of rice, at least in the short-run. In general, each country decides how much to import or export on the basis of amounts needed to stabilize the domestic price or to maintain desired stock levels. A large percentage of international rice trade is handled on a government-to-government basis in most years (Slayton).

Uncertainties in the world rice market coupled with the desire to be self-sufficient in rice production and to support the income of rice producers has led many countries to pursue policies aimed at rice self-sufficiency through a combination of support prices, border protection measures, input subsidies, state control of trade, export assistance programs, and long term structural support policies. Collectively, these policies have lowered world prices and reduced world rice trade volumes. This section discusses *what* the major trade distorting barriers are, *how* each impacts on world trade and prices, and *who* the major rice countries are that employ each policy type. The policies are categorized as either trade restrictions or trade incentives. Both types of trade policies tend to distort world rice trade and price levels away from what they would be under free trade.

Trade Restrictions

Both importing and exporting countries can impose restrictions on world rice trade. The consequences for world markets, however, are fundamentally different. If an importing country restricts the inflow of foreign rice, the consequence is lower world trade and lower world prices of rice but higher domestic prices and increased domestic rice production in the import-restricting country. Lower world trade is also a consequence if an exporting country restricts exports. However, rice prices will be higher in importing countries and export-competing countries with just the opposite the case in the export-restricting country. In either case, world rice markets tend to become more volatile.

Import Restrictions

Most rice importing countries make concerted efforts to stabilize domestic prices, support domestic producers, and achieve self-sufficiency. These policies may restrict trade by lowering the price levels paid for imported rice. Such policies include import tariffs or undervaluation of the country's currency vis-a-vis the currency of major exporting countries. On the other hand, import restrictions may take the form of explicit quantitative limits on the volume of rice that can be imported during a given time period. Such import restrictions are referred to as non-tariff barriers and include policies such as import quotas, variable levies, government-controlled import monopolies, and other more subtle forms of import controls.

Import Tariff

- **What** A charge levied on imports which may be *specific* or *ad valorem*. A specific tariff is a fixed charge per unit of the commodity imported (e.g., \$10/ton). An ad valorem tariff is a fixed percentage of the per unit value of the commodity imported (e.g., 10% of the c.i.f. import price). Also called an import tax or customs duty.

- **How** An import tariff is levied by the governments of importing countries at ports of entry. An import tariff forces a wedge between the internal, domestic price of the commodity and the c.i.f. import price of that commodity. That is, a tariff raises the price paid by consumers and received by producers in the importing country above what it otherwise would be and lowers the price received by exporters and exporting country producers below what it otherwise would be. The difference between the higher domestic price in the importing country and the lower price received by producers in the exporting country is the tariff charged by the importing country government. The higher price in the importing country discourages consumption and encourages domestic production which leads to a reduction in import volume. At the same time, the lower price in the exporting country reduces the profitability of production and the artificially distorts competitiveness in the world market. An import tariff is not a tool to protect producers in importing country from world price variability. The specific or ad valorem tariff rate remains fixed so that internal prices rise and fall with world prices. A *countervailing duty* is a tariff imposed to offset the competitive advantage that an export subsidy gives to imports of some commodity like rice from an exporting country. Countries often charge different tariff rates on imports of a commodity depending on how highly processed the commodity is. In general, the more highly processed a commodity the higher the tariff in order to provide an incentive to import the raw commodity and process it domestically.

- **Who** Nearly all importing countries levy tariff on imports of rice (Table 1). Most tariffs are less than 10% of the import value. However, at least eight of the major importing countries levy tariffs of 20% or more, including Senegal, Sri Lanka, Brazil, Syria, the Philippines, Peru, Mexico, and Japan. During the 1970s and 1980s, South Korea structured its rice import tariff rates to encourage domestic milling of imported brown rice. The EC-12 has also at times imposed higher levies on imported parboiled rice in order to protect the Italian rice processing industry.

Import Quota

- **What** An absolute limit on the volume of foreign-produced commodity allowed through the ports of entry of an importing country. The limit may be on total import volumes or with respect to the imports from a particular country or group of countries (targeted quota). Quotas of specified amounts are generally set and announced annually, bi-annually, or quarterly. An import *embargo* or *ban* is essentially a zero-level quota.
- **How** Imports are generally restrained through the issuing of import licenses by the Governments of the importing country to selected importers in the amount of the desired quota level. Only importers with licenses are allowed to import and only in the amounts allowed by the licenses. When the import quota is restrictive, (i.e., the volumes allowed for import are less than otherwise would be the case), the effects on the importing and exporting countries' markets and the world market are equivalent to those of an import tariff. The major difference is that the imposition of an import quota completely insulates an importing country's market from world price and trade variability. This occurs because the wedge between domestic and world prices created by the quota is not fixed. Rather, the import volume is fixed and will not vary even if world market conditions change unless the importing country government sets the allowed import volume at a different level. As a consequence, when world prices decrease, for example, only the wedge between domestic price in the importing country and the price in the world market rises. Because the import volume is not allowed to rise as world prices rise, then internal prices do not drop and neither consumption nor production in the importing country is affected. Most Favored Nation policies apply quotas of relatively lower levels for countries meeting certain conditions as determined by the importing country government. A *voluntary import restraint (VIR)* is a subtle form of import quota with the same economic impacts. A VIR is usually negotiated between an importing country and one or more exporting countries to limit its imports to some specified quantity in order to reduce trade friction. The implied "quota" is the product of the negotiation.
- **Who** Five major importing countries impose some form of import quota or outright import ban: Japan, South Korea, the EC-12, Syria, and Nigeria (Table 1). The EC-12 provides preferential (most favored nation) treatment to rice imports from African, Caribbean, and Pacific (ACP) countries through higher relative import quotas, lower import levies, and grants for the improvement of the rice industry in ACP countries. About 95% of EC rice imports under this arrangement comes from Surinam. Some countries, such as Kuwait and Malaysia, informally impose quotas. Kuwait had a policy of buying over 50% of its needs from Pakistan while Malaysia prefers to buy rice from Thailand. The Kuwaiti policy may have been related to the ethnic backgrounds of the countries involved while the Malaysian preference may be economic in origin.

Table 1. Major World Rice Importing Countries and Their Trade Policies

Country	% World Imports 1987-89	% World Prod 1987-89	GATT Member	Prod Subsidy Equiv	Prod/Refer Price	Import Tariff 1987b/	Import Quotas c/	State Monop	Exc Rate Over Valued	Var Levy	Direct Pay	Price Support	Income Support	Input Assist	Market Assist	Infrastr Support
EC-12	9.5	0.5	Y	56	2.25	0	+	-	-	Yes	-	Yes	-	-	-	Yes
Iran	6.5	0.2	N			-	-	Yes	Yes	-	-	Yes	-	Yes	-	-
China	6.1	36.3	N	-62	0.63	-	-	Yes	Yes	-	-	-	-	Yes	-	Yes
Iraq	4.6	0.0	N			-	-	Yes	-	-	-	-	-	-	-	-
USSR	4.6	0.5	N	78	1.45	-	-	Yes	-	-	-	-	Yes	Yes	-	Yes
Bangladesh	4.0	4.9	Y	35	1.61	+	-	Yes	Yes	-	-	-	-	Yes	-	-
Sa Arabia	3.9	0.0	N			-	-	Yes	-	-	-	Yes	-	-	-	-
India	3.1	19.5	Y	4	1.09	+	-	Yes	-	-	-	-	-	Yes	-	Yes
Senegal	3.0	0.0	Y			+++	-	Yes	-	-	-	Yes	-	Yes	-	Yes
Ivory Coast	2.7	0.1	Y			-	-	Yes	-	Yes	-	Yes	-	Yes	Yes	Yes
Malaysia	2.7		Y			+	-	Yes	-	-	-	Yes	-	Yes	-	Yes
E Europe a/	2.1		Y			+	-	Yes	-	-	-	-	-	-	-	-
Nigeria	2.1		Y	49	1.17	+	++	Yes	Yes	-	-	-	-	Yes	-	-
So Africa	2.1		Y			-	-	-	-	-	-	Yes	-	Yes	-	-
Indonesia	1.6		Y	8	0.98	+	-	Yes	-	-	-	Yes	-	Yes	-	Yes
Sri Lanka	1.6		Y			+++	-	Yes	-	-	-	-	-	Yes	-	Yes
Viet Nam	1.5	3.4	N			-	-	Yes	Yes	-	-	-	-	-	-	-
Cuba	1.5		Y			+	-	Yes	Yes	-	-	-	-	-	-	-
UAE	1.2		N			-	-	-	-	-	-	-	-	Yes	-	Yes
Brazil	1.2	2.4	Y	95	0.57	+++	-	Yes	Yes	-	-	Yes	-	Yes	Yes	-
Syria	1.0		N			+++	+	-	-	-	-	-	-	-	-	-
Philippines	1.0	1.9	Y			+++	-	Yes	-	-	-	Yes	-	Yes	-	-
Peru	1.0		Y			+++	-	Yes	Yes	-	-	Yes	-	Yes	-	Yes
Canada	1.0	0.0	Y			+	-	-	-	-	-	-	-	-	-	-
Madagascar	0.9		Y			+	-	-	-	-	-	-	-	-	-	-
Kuwait	0.7		Y			-	-	-	-	-	-	-	-	Yes	-	-
Mexico	0.5		Y			+++	-	Yes	Yes	-	-	Yes	-	Yes	-	-
Japan		2.8	Y	97	7.01	+++	++	Yes	-	-	Yes	Yes	Yes	-	Yes	Yes
So Korea		1.7	Y	84	4.30	-	++	Yes	-	-	-	Yes	-	Yes	Yes	Yes
Other:																
GATT	17.6															
Non-GATT	10.5															
Total:																
GATT	60.1	33.8														
Non-GATT	39.9	40.4														

a/ Two countries in this group, Albania and Bulgaria, are non-GATT members.

b/ Level unknown = -; No tariff = 0; 0-9% tariff = +; 10-19% tariff = ++; Over 19% tariff = +++.

c/ Import quotas, - = none, + = some, ++ = 0 or near 0.

Source: Childs (1990); USDA (1990a); USDA (1988); USDA (1990c); USDA (selected d); Webb, Lopez, & Penn (1990); Cramer, Wailes, and Phillips (forthcoming).

Variable Levy

- **What** A variable fee charged on imports by the government of the importing country. The intent of a variable levy is to maintain internal prices fixed and unresponsive to world price changes.
- **How** A fee equal to the difference between a high predetermined internal price in the importing country and the lower border price of imports is charged on imports. The fee is usually calculated and adjusted on a daily basis. Thus, the fee charged on imports is precisely what is needed to insure that imports cannot enter the country at lower than the level received by domestic producers for their production. As world prices change, the fee changes as necessary to keep the internal price of imported commodity fixed at the predetermined level. The levy raises internal commodity prices in the importing country to the desired predetermined level, encouraging domestic production, discouraging consumption, and restricting imports. In the world market the effect is to cut export demand, reduce price, and lower farm profitability in exporting countries. The effects of a variable levy are more like those of an import quota than an import tariff.
- **Who** The European Community (EC-12) supports the farm price of rice at the target level through a variable levy on rice imports. The *threshold* price (the price of imported rice at the port) is set by the Council of Agricultural Ministers annually and increases during the year to take storage costs into account. Foreign supplies of rice are only allowed to enter the Community at the threshold price. The internal target price of rice is the threshold price plus transportation costs to an internal point.

State Import Monopoly (State Trading Agency)

- **What** The Government of the importing countries operate as the sole import agency.
- **How** Decisions on the level and timing of imports are made by an authorized government agency. Licenses to import are not made available to private traders. The authorized state trading agency (STA) negotiates import arrangements with foreign trading groups or other government agencies. Imports are usually marketed domestically through official channels. Commodity imported by the STA is resold at a price level that can be above or below the import price depending upon the internal food and agricultural policy objectives. *Consequently, a government monopoly on importing is not necessarily an import restriction.* When a state trading agency operates to restrict imports, the effects on trade and prices are equivalent to those of an import quota. The importing country government absorbs any gain or loss from the internal resale of the imported commodity.
- **Who** State trading agencies are a main feature of the rice policy of many countries and developing countries in particular (Table 1). Most countries that operate restrictive import policies control at least part of total imports through a state trading agency. Only seven of the largest 29 rice importing countries do not control at least some percentage of their imports through state import monopolies (Table 1).

Domestic Production/Consumption Policy Restrictions on Imports

- **What** Policies implemented by importing countries to achieve domestic goals that work to restrain imports.
- **How** A number of policies implemented by importing countries to achieve domestic goals result in lower imports. Such policies include government financed investments in infrastructure and production research (such as varietal and yield improvements), production subsidies, subsidies for the purchase of production inputs, direct-payment-type programs to boost farm production and incomes, and any policy that taxes domestic consumption. Some price support programs require measures to insure that imports do not undermine their effectiveness in supporting price including acreage control programs, marketing orders, and government stock-holding policies. In many developing countries, rice is procured from domestic producers by the government and sold to consumers at a lower price. Like a direct payment scheme, such programs boost production in the importing country and lead to lower imports than would otherwise be the case. A few countries require that a large portion of commodities like rice to be marketed through some government agency in an internal marketing system largely controlled by the government. If such systems are not particularly efficient, as is usually the case, or if there is any discrimination in marketing against foreign commodities, as is also usually the case, then imports may move more slowly into the domestic market than otherwise resulting in a lower overall level of imports than would otherwise be the case.
- **Who** Almost all importing countries operate some type of domestic policy that restricts imports. Most common are input subsidies and farm credit programs, investments in infrastructure, and price support programs (Table 1). Japan, South Korea, Nigeria, and Mexico are potentially important rice importing countries whose internal marketing systems are controlled by the government. Some countries have unique programs that discriminate against imports. South Korea and the Philippines, for example, historically have mixed other cheaper, cracked grains with rice to increase the food supply rather than import additional rice. The EC-12 provides a direct payment to rice producers to encourage the production of long grain rice. Spanish rice producers have been the primary beneficiaries of this program. Initiated in 1988 with a payment of 330 ECU per planted hectare, the EC-12 program is a five-year initiative which is to be phased out through gradual elimination of the subsidy by 1992.

Other Non-Tariff Barriers

- **What** Numerous policies with ostensive objectives relating to health and sanitation, packaging and labeling, grades and standards, and similar policies may restrict imports and are often used with the explicit intention of restricting the flow of imports.
- **How** These barriers include a wide range of measures, such as sanitary regulations, residue and aflatoxin standards, product definitions, herbicide and pesticide regulations, grades, and production or processing standards which must be met before certain products are allowed to enter the importing country. For example, if certain pesticides are banned in an importing country, then imports of products grown using the pesticide are also likely to be banned. While such protectionistic measures can be motivated by legitimate health and safety concerns and restrict trade as a result, they can also be implemented with a primary objective of import restriction. Non-tariff

barriers in this category have essentially the same effect on imports as import quotas. Requiring imported commodities to conform to domestic standards raises costs in the exporting country of producing commodities for sale in those foreign markets and restricts imports.

- Who Nearly all countries impose health, sanitation, and other requirements that likely restrict imports to some extent. Reliable and complete information on such policies, however, are sketchy at best. For this reason, many countries convert tariff-type policies to non-tariff-type policies in the process of negotiating market liberalization. Such non-tariff barriers are difficult to detect. Because they are usually imposed for other apparent reasons, it is difficult to determine the extent to which such barriers are actually intended to restrict trade.

Exchange Rate Undervaluation

- What Manipulation of currency markets by an importing country to reduce the units of exporting countries' currencies that can be exchanged for one unit of the importing country's currency, thus "undervaluing" its currency.
- How Undervaluation of an importing country's currency reduces the purchasing power of the importing country's currency in foreign markets. This makes imports more expensive in domestic currency for consumers in the importing country, restricts imports, and raises the price of imported commodities in domestic currency. The higher domestic price stimulates domestic production in the importing country. At the same time, the reduction in import demand by the country undervaluing its currency results in a drop in world trade and lower world prices. The market impacts of undervaluing an importing country's currency are equivalent to those of an *ad valorem* import tariff. One difficulty is that undervaluing the exchange rate restricts all imports not simply the imports of a particular commodity of interest like rice. An import tariff is more useful for targeting particular commodities. In essence, a country can undervalue its currency through currency market operations by flooding the market with its currency in exchange for exporting countries' currencies. A country may undervalue its currency not only to restrict imports but also to stimulate its exports since by undervaluing its currency the importing country simultaneously "overvalues" foreign currencies and thereby stimulates increased foreign purchases of its goods.
- Who Few if any countries apparently attempt to undervalue their currencies in order to restrict imports. Some, however, have attributed at least some of the blame for Japan's persistent trade surpluses with the U.S. and other of its major trading partners to a Japanese policy of undervaluing the yen (Schuh).

Export Restrictions

Most rice surplus countries operate programs intended to support and protect domestic producers of agricultural products. Some of these policies may restrict the availability of supplies for export and increase the price demanded for rice in the world market. Such policies include export taxes or overvaluation of the country's currency vis-a-vis the currency of major importing countries. On the other hand, export restrictions may take the form of explicit quantitative limits on the volume of rice that can be exported during a given time period. Such export restrictions are referred to as

non-tariff barriers and include policies such as export quotas, government-controlled export monopolies, and other more subtle forms of export control. A number of domestic producer support and other policies such as acreage reduction programs, price supports above world price levels, and deficiency payments also work to restrict rice exports.

Export Tax

- **What** A charge levied on foreign sales of a commodity and may be either *specific* or *ad valorem* in nature. A specific export tax is a fixed charge per unit of the commodity exported (e.g., \$10/ton). An ad valorem export tax is a fixed percentage of the per unit value of the commodity sold to foreign buyers (e.g., 10% of the f.o.b. export price).

- **How** An export tax reduces the outflow of a commodity to the world market from a surplus supply country by raising the cost of purchases to foreign buyers and reducing the price received by producers in the exporting country. The intent generally is to raise revenue for the government of the exporting country, to help fight price inflation, or to avoid a deficit supply situation from occurring in the country's domestic market, particularly during poor production years. An export tax is levied by the governments of exporting countries at ports of exit. An export tax forces a wedge between the internal, domestic price of the commodity and the f.o.b. export price of that commodity. That is, an export tax lowers the price paid by consumers and received by producers in the exporting country below what it otherwise would be and raises the price received by producers and consumers in one or more importing countries above what it otherwise would be. The difference between the lower domestic price in the exporting country and the higher price received by producers in the exporting country is the tax charged by the exporting country government (after accounting for transportation costs and all other international price distorting measures). The higher price in importing countries as a result of the tax discourages consumption and encourages domestic production, leading to a reduction in foreign demand for the exporting country's commodity. At the same time, the lower price in the exporting country reduces the profitability of production and distorts competitiveness in the world market. An export tax is not a tool to protect producers in an exporting country from world price variability. The specific or ad valorem tariff rate remains fixed so that internal prices rise and fall as world prices change. A *countervailing* tax is a charge imposed on exports to offset the competitive advantage that an import subsidy gives to the importing country of some commodity like rice from an exporting country. A *targeted export tax* limits the outflow of a particular commodity to a particular country or is only applied on particular sales.

- **Who** Thailand has historically taxed its rice exports to help insure an adequate domestic supply and low price to consumers. Thailand abandoned the use of an export tax in 1985. Of the 15 largest rice exporting countries, only Viet Nam, Uruguay, Argentina, and Egypt currently assess a tax on rice exports (Table 2).

Export Quota

- **What** An absolute limit on the volume of domestically-produced commodity that a surplus production country allows for purchase by foreign buyers. The limit may be on total export volumes or with respect to the exports to a particular country or group of countries (targeted quota). Quotas of specified amounts are generally set and

Table 2. Major World Rice Exporting Countries and Their Trade Policies

Country	% World Exports 1987-89	% World Prod 1987-89	GATT Member	Prod Subsidy Equiv	Prod/Refer Price	Export Subsidy	Food Aid	State Monopoly	Exc Rate Over Valued	Exp Tax	Exp Quota	Direct Pay	Price Support	Income Support	Input Assist	Market Assist	Infrastr Support
Thailand	37.9	4.1	Y	5	1.00	-	-	-	-	-	-	-	Yes	-	Yes	Yes	-
United States	19.2	1.4	Y	49	1.02	Yes	Yes	-	-	-	-	Yes	Yes	Yes	Yes	Yes	Yes
Pakistan	7.4	1.1	Y	-67	0.49	-	-	Yes	Yes	-	-	-	-	-	Yes	-	-
EC-12	7.2	0.5	Y	56	2.25	Yes	Yes	-	-	-	-	Yes	Yes	-	-	-	Yes
China	5.1	36.3	N	-62	0.63	-	-	Yes	Yes	-	-	-	-	-	Yes	-	Yes
Viet Nam	4.1	3.4	N			-	-	-	Yes	Yes	Yes	-	Yes	-	-	-	-
Burma	3.3	2.5	Y			-	-	Yes	Yes	-	-	-	-	-	Yes	Yes	-
Australia	3.0	0.2	Y	4	1.00	Yes	-	Some	-	-	-	-	Yes	-	-	Yes	Yes
India	2.4	19.9	Y	4	1.09	-	-	Yes	Yes	-	-	-	-	-	Yes	-	Yes
Uruguay	1.7	0.1	Y			-	-	Yes	-	Yes	-	-	-	-	-	-	-
North Korea	1.3	1.7	N			-	-	Yes	-	-	-	-	-	-	-	-	-
Argentina	1.1	0.1	Y			-	-	-	Yes	Yes	-	-	-	-	-	-	-
Taiwan	1.0	0.5	N	46	1.76	-	-	Yes	-	-	-	-	Yes	-	-	-	Yes
Egypt	0.8	0.5	Y	-126	1.34	-	-	-	Yes	Yes	-	-	-	-	Yes	Yes	-
Indonesia	0.5	8.6	Y	4	0.99	-	-	Yes	-	-	-	-	-	-	Yes	-	Yes
Others	4.0																
GATT	88.6	42.4															
Non GATT	11.4	38.5															

Source: Childs (1990); USDA (1990a); USDA (1988); USDA (1990c); USDA (selected d); Webb, Lopez, & Penn (1990); Cramer, Wailes, & Phillips (forthcoming).

announced annually, bi-annually, or quarterly. An export *embargo* or *ban* is essentially a zero-level quota.

- **How** Exports are generally restrained through the issuing of export licenses by the government of the exporting country to selected exporters in the amount of the desired quota level. Only exporters with licenses are allowed to export and only in the amounts allowed by the licenses. When the export quota is restrictive, (i.e., the volumes allowed for export are less than otherwise would be the case), the effects on the exporting and importing countries' markets and the world market are equivalent to those of an export tax. The major difference is that the imposition of an export quota completely insulates an exporting country's market from world price and trade variability. This occurs because the wedge between domestic and world prices created by the quota is not fixed as is the case with an export tax. Rather, the export volume is fixed and will not vary even if world market conditions change unless the exporting country government sets the allowed export volume at a different level. As a consequence, when world prices decrease, for example, only the wedge between domestic price in the exporting country and the price in the world market rises. Because the export volume is not allowed to rise as world prices rise, then internal prices do not drop and neither consumption nor production in the exporting country is affected. Most Favored Nation policies apply quotas of relatively lower levels for countries meeting certain conditions as determined by the exporting country government. A *voluntary export restraint (VER)* is a subtle form of export quota with the same economic impacts. A VER is usually negotiated between an exporting country and one or more importing countries to limit its exports to some specified quantity in order to reduce trade friction. The implied "quota" is the product of the negotiation.

- **Who** Thailand has historically imposed a form of export quotas in times of low production. Over much of the last several decades, rice exports from Viet Nam have been severely restricted and often banned completely. As late as early 1989, only a handful of state trading companies and import/export companies of in the southern, rice-surplus provinces in Viet Nam received licences to export. In June of 1989, however, the Vietnamese government significantly expanded the list of export licenses and quotas, dramatically increasing the amount of rice authorized for export. Although Viet Nam is the only major exporting country to control exports with quoats, a total export embargo (a zero-level, targeted export quota) against Iraq, the largest U.S. export market for rice, was sanctioned by the U.N. in August 1990. The immediate effect for the world rice market has been downward pressure on both price and trade and an accumulation of rice stocks in exporting countries. Over the long run, once the embargo is lifted, there may be more of an impact on the pattern of world rice trade than on the volume or U.S. share of world rice exports. An example of a VER is the limit by Japan on exports of automobiles to the United States. This has led to an increase in U.S. automobile prices, increased Japanese exports of more top-of-the-line automobiles and less of the lower cost vehicles.

State Export Monopoly (State Trading Agency)

- **What** The government of an exporting country operates as the sole export agency of the country.

- **How** Decisions on the level and timing of exports are made by an authorized government agency. Licenses to export are not made available to private traders. The authorized

state trading agency (STA) negotiates export arrangements with foreign trading groups or other government agencies. Exported commodities are obtained from domestic producers through government procurement operations and resold in world markets. The price at which the rice is procured from producers and sold on the world market may be higher or lower than the competitive price level depending upon the internal food and agricultural policy objectives. *Consequently, a government monopoly on exporting is not necessarily an export restriction.* When a state trading agency operates to restrict exports, the effects on trade and prices are equivalent to those of an export quota. The exporting country government absorbs any gain or loss from the resale of the commodity on the world market.

- **Who** Most state export monopoly countries with internal rice prices below the world price level, such as China and Pakistan, attempt to resell procured rice on the world market at a price in excess of what it might be under a free trade scenario. At times, however, China allows more rice exports than normal in order to finance imports of a larger quantity of a cheaper grain. In general, however, the Chinese policy of buying low domestically and selling high in foreign markets when they export subsidizes consumers and taxes producers. One study suggests that Chinese producers were taxed equivalent to 62% of the border price in 1987 (Webb, Lopez, and Penn).

Domestic Policies That Restrict Exports

- **What** Policies implemented by exporting countries to achieve domestic goals that work to restrict exports.
- **How** Certain domestic policies implemented by exporting countries lead to smaller rather than greater exports from those countries. Domestic acreage controls and set aside programs, programs to combat domestic food price inflation by restricting exports, producer price ceilings, production taxes, and other programs all lead to smaller exports and tend to restrict world trade and boost world price. The domestic effects in the exporting country depends on the particular policy implemented. A production control measure, for example, would reduce production, consumption, and exports but boost domestic price in the exporting country. On the other hand, a producer price ceiling would discourage production and exports but encourage consumption. Policies that encourage domestic consumption also discourages exports.
- **Who** The United States historically has used forms of acreage control to help support internal prices. The U.S. school lunch program, food stamp program, and similar incentives to domestic consumption not available to foreign consumers tend to increase internal demand and lower quantities available for export. These type of programs have been blamed for large drops in U.S. rice market share. Other rice exporting countries with producer price support programs include the EC-12, Australia, and Taiwan (Table 2).

Exchange Rate Overvaluation

- **What** Manipulation of currency markets by an exporting country to increase the units of foreign currency that can be purchased with one unit of its own currency, thus "overvaluing" its currency and simultaneously "undervaluing" the currencies of importing countries.

- How When an exporting country overvalues its currency vis-a-vis the currency of one or more importing countries, it in effect undervalues the currencies of its trading partners, reducing the purchasing power of those currencies and restricting foreign demand for the exporting country's commodities. In essence, the importing country pays an additional charge in its own currency for each unit it imports from the currency overvaluing country. The market impacts of overvaluing an exporting country's currency are equivalent to those of an *ad valorem* export tax. One difficulty is that overvaluing the exchange rate depresses exports of all exportable commodities from the overvaluing country not simply the exports of a particular commodity of interest such as rice. An export tax is more useful for targeting particular commodities. In essence, an exporting country can overvalue its currency through currency market operations by purchasing its own currency off the market in exchange for importing countries' currencies. A country may overvalue its currency not only to restrict its exports for whatever reason but also to boost its imports. The foreign market purchasing power of consumers in the overvaluing country is increased encouraging imports of foreign goods.
- Who The rice exporting countries of Pakistan, China, Viet Nam, Burma, India, Argentina, and Egypt have tended to maintain overvalued currencies in recent years leading to restrictions on exports (Table 2).

Trade Incentives

World trade can be distorted by not only policies that restrict trade but also those that increase trade. Policies of exporting countries that attempt to capture a larger share of world markets for their producers may increase the volume of world trade but will also shift world trade patterns. Importing countries may choose to increase the proportion of domestic supplies of a commodity that come from foreign sources for a variety of reasons. Again, however, the consequence can be a shift in world trade patterns as well as an increase in world trade volume. If an importing country provides an incentive for a larger inflow of foreign rice, for example, the consequence is an increase in world rice trade and price but lower domestic prices and domestic rice production in the import-enhancing country. Increased world trade may also be a consequence if an exporting country provides an incentive for greater exports. However, rice prices will be lower in importing countries and export-competing countries with just the opposite the case in the export-enhancing country.

Import Incentives

Importing country policies that stimulate imports are of less concern to exporting countries than those that restrict imports. Nevertheless, import incentives distort world trade and prices away from the free trade, competitive levels. A number of tools are available to importing countries to stimulate imports. The use of such tools, however, is by far much less common than that of import restricting measures.

Import Subsidies

- What A direct compensation paid by the importing country government to domestic importers on purchases of commodity from one or more exporting countries. Import subsidies can be *specific* or *ad valorem*. A specific subsidy is a fixed bonus paid per

unit of the commodity purchased (e.g., \$10/ton). An ad valorem subsidy is a fixed percentage of the per unit value of the commodity purchased (e.g., 10% of the c.i.f. import price). Import subsidies can also be variable rather than fixed just as a variable levy is a variable import tariff. Indirect compensations provided to importers, including government-subsidized financing on imports and government-to-government concessional food purchases (food aid) are also import subsidies. Some of these are treated separately in more detail in this document.

- **How** An import subsidy is designed to expand a country's imports of a particular commodity by reducing domestic prices of imports and thereby stimulating domestic import demand. The intent generally is to combat inflation, improve a food deficit situation, maintain a policy of relatively "cheap food", or stockpile commodities for emergency food need purposes. An import subsidy forces a wedge between the internal, domestic price of the imported commodity and the c.i.f. import price of that commodity. That is, a subsidy lowers the price paid by consumers and received by producers in the importing country and raises the price received by producers and paid by consumers in the exporting country above what it otherwise would be. The difference between the higher domestic price received in the exporting country and the lower price paid by the importing country is the subsidy paid by the government in the importing country (after accounting for transportation costs and all other price distorting measures). The higher price in the exporting country discourages consumption and encourages domestic production which leads to an increase in supplies available for export. At the same time, the lower price in the importing country reduces the profitability of production and stimulates consumption leading to an increased demand for the larger supplies available from the exporting country. *The effect of an import subsidy on the world market and prices is equivalent to that of an export subsidy.* The only real difference between the two policies is that the importing country pays the cost of an import subsidy while the government of an export subsidizing country pays the cost of the export subsidy. A fixed import subsidy is not a tool to reduce price variability in the importing country. As world market prices change, the specific or ad valorem subsidy rate remains fixed so that internal prices in the importing country rise and fall with world prices. *A targeted import subsidy* limits the subsidy to imports from a particular exporting country or is applied on particular purchases.
- **Who** The use of explicit import subsidies on rice imports is virtually non-existent. A number of rice importing countries, however, subsidize rice consumption in various ways and thereby stimulate an increase in rice imports. Many of the countries which import rice through a state import monopoly sell the imported rice internally at a price below the world market purchase price. These countries include China, Indonesia, and Brazil (Table 1). Food aid purchases or receipts of rice by the government of an importing country are often sold to domestic consumers at prices much below prevailing world market prices.

Domestic Policies That Boost Imports

- **What** Policies implemented by importing countries to achieve domestic goals that work to boost imports.
- **How** Certain domestic policies implemented by importing countries lead to greater rather than smaller imports into those countries. Domestic production controls, government

purchases of imports as part of price stabilization efforts during periods of price increases, programs to combat domestic food price inflation by fostering greater imports, producer price ceilings, production taxes, and other programs would all lead to greater imports and tend to boost world trade and price. The domestic effects in the importing country depends on the particular policy implemented. A production control measure, for example would reduce both production and consumption but boost both price and imports in the importing country. On the other hand, a producer price ceiling would discourage production and encourage consumption while boosting imports.

- **Who** Japan operates a rice acreage reduction program but prevents imports by the use of a highly restrictive import quota or ban. Nearly all countries implement programs, such as producer price controls, that put upward pressure on imports. In almost every case, however, the government of the importing country prevents the increase in imports that would otherwise occur through its monopoly control on imports or measures like import quotas.

Exchange Rate Overvaluation

- **What** Manipulation of currency markets by an importing country to increase the units of exporting countries' currencies that can be purchased with one unit of its own currency, thus "overvaluing" its currency.
- **How** When an importing country overvalues its currency vis-a-vis the currency of one or more exporting countries, exporters effectively receive a price premium from the overvaluing importing country equivalent to the overvaluation. The price premium increases export quantities and the world price but lowers the price in the importing country. Overvaluation of an importing country's currency increases the purchasing power of the importing country's currency with respect to the exporting country's commodities. This makes imports by the overvaluing country less expensive for consumers in their own currency, boosting imports and pushing the price of the commodity down in the importing country. The market impacts of overvaluing an importing country's currency are equivalent to those of an *ad valorem* import subsidy. One difficulty is that overvaluing the exchange rate is an incentive to increase all imports not simply those of a particular commodity like rice. An import subsidy is more useful for targeting particular commodities. In essence, an importing country can overvalue its currency through currency market operations by purchasing its own currency in exchange for exporting countries' currencies. A country may overvalue its currency not only to stimulate its imports but also to restrict its exports since by overvaluing its currency the importing country simultaneously "undervalues" foreign currencies and thereby discourages purchases of its goods by foreign buyers.
- **Who** Currency overvaluation is a persistent problem for many countries, particularly for those with unstable economies and high rates of inflation. These countries are often simply not willing to allow the magnitude of depreciation in their currencies that is needed as an inflationary adjustment. Most of these countries, however, also impose some type of import restrictions to discourage imports. Nigeria, China, Bangladesh, some Eastern European countries, Cuba, Brazil, Philippines, Peru, and Mexico have all maintained overvalued currencies in recent years (Table 1).

Export Incentives

Fifteen countries exported over 96% of the rice in world trade in 1987-89. The governments of most rice exporting countries operate some type of policies that lead to higher exports of rice than would be the case in the absence of those policies. The policies basically boost exports by increasing the price levels received for exported rice. Such policies may include export subsidies of various forms, undervaluation of the country's currency vis-a-vis the currency of major importing countries, or other more subtle means to stimulate exports.

Export Subsidy

- **What** A direct compensation paid by the exporting country government to foreign buyers on purchases of commodity from the exporting country. Export subsidies can be *specific* or *ad valorem*. A specific subsidy is a fixed bonus paid per unit of the commodity purchased (e.g., \$10/ton). An ad valorem subsidy is a fixed percentage of the per unit value of the commodity purchased (e.g., 10% of the f.o.b. export price). Export subsidies can also be variable as with the variable levy on imports. An export subsidy is often called a payment, differential, assistance, compensation, restitution, etc., to avoid negative connotations. Indirect compensations provided to importing countries, including government-subsidized financing on exports, export promotion and information activities, etc., are also export subsidies. Some of these are treated separately in more detail in this document.

- **How** Export subsidies are designed to expand exports of a particular country by placing products on the world market at prices lower than would exist under competitive conditions. The intent generally is to reduce competitive pressure on producers or to dispose of surplus production. An export subsidy forces a wedge between the internal, domestic price of the exported commodity and the f.o.b. export price of that commodity. That is, a subsidy lowers the price paid by foreign consumers and received by foreign producers below what it otherwise would be and increases the price received by producers in the exporting country above what it otherwise would be. The difference between the higher domestic price in the exporting country and the lower price received by the importing country is the subsidy paid by the government in the exporting country (after accounting for transportation costs and all other price distorting measures). The higher price in the exporting country discourages consumption and encourages domestic production which leads to an increase in supplies available for export. At the same time, the lower price in the importing country reduces the profitability of production and stimulates consumption leading to an increased demand for the larger supplies available from the exporting country. An export subsidy, therefore, artificially distorts competitiveness in the world market in favor of the subsidizing exporting country. A specific or ad valorem export subsidy is not a tool to limit price variability in the exporting country. As world market prices change, the subsidy rate remains fixed so that internal prices in the exporting country rise and fall with world prices. A variable export subsidy, however, rises when the world price falls and drops when the world price rises, absorbing all of the variability in world price and leaving domestic prices unaffected. A *targeted export subsidy* limits a subsidy to a particular country or is applied on particular sales.

- **Who** The European Community (EC) operates an export restitution program through which exporters receive a subsidy to bridge the gap between domestic market prices and

world market prices. Export subsidies are necessary to help achieve price support in the EC. Commodity purchased by the EC authorities in an effort to support internal prices must eventually be exported, and exports are only possible with the help of subsidies (Table 2). In 1987, the EC rice producer price was over 200% of the border reference price. The Australian Rice Marketing Board operates a two-price scheme (a domestic selling price and a lower export selling price) through which rice exports are subsidized.

Export Bonus Scheme

- **What** The government of an exporting country may pay an in-kind bonus to foreign buyers by providing lower cost or free additional supplies to foreign buyers for every unit purchased.
- **How** An export bonus scheme is basically an in-kind export subsidy program. If substantial government-held inventories of a commodity exist in an exporting country, the government may offer a bonus of lower cost or free additional supplies with every purchase by foreign buyers to entice them to divert their purchases from other export suppliers. The effects are to reduce foreign prices and production and stimulate foreign consumption and imports from the country providing the export bonus. The additional demand created for supplies from the exporting country may increase the price in the exporting country. As supplies are released from government holdings, however, there may be some downward pressure on internal prices in the exporting country.
- **Who** The U.S. Export Enhancement Program (EEP) is currently the only example of this type of export incentive scheme in world rice markets.

Foreign Market Development

- **What** Activities funded at least in part by the government of an exporting country to enhance foreign demand for commodities produced in the exporting country.
- **How** Usually working through commodity producer associations, the government cooperates in the funding of activities in importing countries designed to increase the demand in that country for commodities produced in the promoting country. Such activities in an importing country range from advertising in trade and consumer periodicals to consumer nutrition education seminars. The intent is to generate a shift in demand for the commodity being promoted from the country doing the promotion. If effective, the result is an increase in exports from the promoting country at a higher price than would otherwise be the case. World price is also pushed up, however, stimulating production and exports by export competitors.
- **Who** Most developed countries operate some type of market development program for the commodities they export often through some type of quasi-governmental agency. U.S. efforts falling into this category include the Cooperator Program, the Export Incentive Program, and the Targeted Export Assistance Program.

Dumping

- **What** Dumping occurs when the exporting country sells a commodity abroad at a price that yields less net revenue (after payment of transportation costs, tariffs, etc.) than do sales in the exporting country's own domestic market.
- **How** The term "dumping" is usually associated with the practice of releasing large quantities of excess commodity on the world market for whatever price can be obtained. Consequently, government surplus disposal operations involving international markets are often considered to be dumping. Government holdings of commodity stocks as a result of domestic price support operations are sold in the world market at a price which is insufficient to cover the government's purchase and storage costs. The dumping practice places exports from more efficient producing countries at a disadvantage. The increased quantity available in the world market lowers world prices and export quantities from more efficient producing countries.
- **Who** Taiwan has dumped excess rice in the world market on several occasions over the last decade. During the late 1970s and early 1980s, Japan dumped Japonica rice on the world market in an effort to keep large and increasing stocks of rice from undermining efforts to support producer prices. The U.S. rice industry filed complaints against both countries with the Office of the U.S. Special Trade Representative, resulting in trade agreements with both countries restricting the practice. Currently, Korea is reportedly considering reductions in their growing rice inventories through various "marketing" proposals which include disposals into the world market through loans and food aid.

Food Aid

- **What** Food aid is bilateral or multilateral donations or sales on concessional terms of basic foodstuffs generally to developing countries.
- **How** Food aid is an in-kind income transfer from developed, food surplus countries to developing, food deficit countries. Such transfers can be made on concessional terms, i.e., long-term credit sales at low interest rates over a long repayment period. On the other hand, food can be transferred as donations through such programs in response to emergency food relief needs. The impact of food aid on world commodity markets and prices has been a highly controversial issue. Detractors claim that food aid is simply a food dumping program which displaces commercial sales, leading to reduced prices in exporting countries and disincentives for the development of the agricultural sectors in developing countries. Proponents point to the apparent success of food aid programs at fostering export market growth. Japan, South Korea, Taiwan, Brazil, Iran, Peru, Chile, Colombia, and Spain have all graduated from being primarily food aid customers to being primarily commercial customers in world markets over the years.
- **Who** Much of food aid transactions are bilateral in nature, i.e., handled on a government-to-government basis. Multilateral food aid is largely dispersed through the World Food Program. Food aid targets are agreed under the Food Aid Convention, which brings together donor countries and attempts to elicit pledges for both multilateral and bilateral food aid. Historically, the United States has been a major contributor of rice through the Food for Peace or P.L. 480 program. Other countries, such as the EC-12 have recently become important in food aid exports (Table 2).

State Export Monopoly (State Trading Agency)

- **What** Government of the exporting country controls export levels as the sole rice exporting authority in the country.
- **How** Rice exports are completely controlled by the government through a single export agency. Licenses to export are not issued to private traders or groups. The government procures rice from producers at prices above world market levels and then disposes of it on world markets. The effect on world trade and price is the same as an export subsidy or dumping.
- **Who** Of the 15 largest rice exporting countries only 4 do not have some form of state trading agency with a monopoly on exporting (the United States, Thailand, the EC-12, and Argentina). About 30% of world rice exports were from countries whose exports are controlled by a state trading agency (Table 2).

Domestic Production/Consumption Policies that Stimulate Exports

- **What** Policies implemented by exporting countries to achieve domestic goals that work to stimulate exports.
- **How** A number of policies implemented by exporting countries to achieve domestic goals result in higher exports. Such policies include government financed investments in infrastructure and production research (such as varietal and yield improvements), production subsidies, subsidies for the purchase of production inputs, deficiency or direct payment programs to boost farm production and incomes, and any policy that taxes domestic consumption. Some price support programs, such as the EC Common Agricultural Policy, require an increase in exports to insure that stocks do not accumulate and either undermine the program's effectiveness in supporting price or increase government costs significantly.
- **Who** Twelve of the 15 largest exporting countries operate domestic policies that encourage exports (Table 2).

Other Export Incentives

- **What** Numerous other measures are used by exporting countries to boost exports including principally various types of *export credit measures*.
- **How** An exporting country is in a better position to compete for export sales if an ample supply of credit is available to potential buyers. Three types of credit are often extended by exporting country governments to importing countries to foster increased export sales: short-term, long-term, and guaranteed. Short-term credit programs extend funds for relatively short periods of time (around six months) at near commercial rates of interest. Long-term credit is generally made available for up to 30 years at relatively low rates of interest. In guaranteed credit programs, the government simply assures repayment of a commercial loan to an importer in the event of a default on the loan.
- **Who** Export credits are routinely made available by most major rice exporting countries.

Exchange Rate Undervaluation

- **What** Manipulation of currency markets by an exporting country to reduce the units of importing countries' currencies that are needed to purchase one unit of the exporting country's currency, thus "undervaluing" its currency.
- **How** When an exporting country undervalues its currency vis-a-vis the currency of one or more importing countries, it in effect gives a price discount to importers equivalent to the undervaluation. The price discount increases export quantities and the price in the exporting country, but lowers world price. Undervaluation of an exporting country's currency increases the purchasing power of the importing country's currency with respect to the exporting country's commodities. This makes exports from the undervaluing country less expensive for consumers in the importing country in their own currency, boosting exports and raising the price of exported commodities in the exporting country. The market impacts of undervaluing an exporting country's currency are equivalent to those of an *ad valorem* export subsidy. One difficulty is that undervaluing the exchange rate is an incentive to increase exports of all exportable commodities from the undervaluing country not simply the exports of a particular commodity of interest like rice. An export subsidy is more useful for targeting particular commodities. In essence, an exporting country can undervalue its currency through currency market operations by flooding the market with its own currency in exchange for importing countries' currencies. A country may undervalue its currency not only to stimulate its exports but also to restrict its imports since by undervaluing its currency the exporting country simultaneously "overvalues" foreign currencies and thereby discourages purchases of foreign goods.
- **Who** Few if any rice exporting countries explicit are apparently undervaluing their currencies in an attempt to boost exports.

IMPLICATIONS FOR U.S. ACCESS TO FOREIGN RICE MARKETS

With few exceptions and with varying degrees of comprehensiveness and success, all countries intervene in their rice markets. As discussed in the previous section, this intervention can create imbalances in world rice supply and demand, shift world rice trade patterns, and distort world rice prices. Some of the policies implemented in rice trading countries work to increase trade while others tend to restrict trade with differing implications for world rice prices. What is the net effect of these policies? Is world trade, and consequently U.S. exports, higher or lower than would be the case under completely free trade? What have been the consequences for U.S. and world prices? This section addresses these questions. U.S. rice policies affecting trade are also discussed.

Effects of World Rice Market Distortions on U.S. Rice Exports and Price

The net impacts of the myriad government policies that distort world rice trade and prices are difficult to determine simply by studying rice trade and price data. The difficulty, of course, is that the data provide no information on what world trade patterns and prices would have been in the

absence of the policies, i.e., under a free trade scenario. A country-by-country and policy-by-policy review of world rice market distortions suggests strongly that trade-restricting rather than trade-expanding interventions have tended to dominate in world rice markets. This indicates that the likely consequence of these policies has been a reduction in world and U.S. rice trade. What research has been done to determine the magnitude and direction of impact of world rice market interventions provides evidence to support this conclusion. Using a multi-commodity model of world trade, Tyers and Anderson conclude that policy-induced distortions decreased world rice trade in the early 1980s by 24%. Two other independent studies (Roningen and Dixit; Harridge, Pearce, and Walker) estimate that the decline in world trade as a result of governmental policy interventions in the late 1980s was as much as 45%. Tyers and Anderson estimate that world rice prices were 5% below what they would have been in the early 1980s as a result of world rice policies. Roningen and Dixit estimate the decline in world price to be 21% in the late 1980s. These studies suggest that the annual reduction in U.S. rice export revenue as a result of policy distortions in the world rice market has been 40% to 50% or more. A U.S. Department of Agriculture (USDA) study estimates that the elimination of the trade distorting policies of the major rice exporting and importing countries would substantially increase the value of U.S. rice exports (Tables 3 and 4).

A weakness of these studies is that they assume no distinction between japonica and indica rice varieties in their models and analysis. In a recently completed study, Cramer, *et. al.*, treat the two varieties of rice separately in their model and conclude that total trade of both rice varieties is 48% lower as a result of rice policy distortions than would be the case under free trade. They estimate that policy interventions have reduced world exports of high-quality indica rice by 15%, low-quality indica by 39%, and japonica 83%. They estimate that the price of japonica rice has been most adversely affected as a result of world policy interventions (a 61% decrease). They also estimate that the prices of high-quality and low-quality indica rices are 25% and 5%, respectively, lower than would occur under free trade. Cramer, *et. al.* estimate that the consequence for the U.S. rice industry has been lower gross revenues from japonica and indica rice exports by 80% and 15%, respectively, than would have been the case under free trade.

U.S. Rice Policy: A Reaction to World Rice Market Protectionism

The world trade and price depressing effects of growing protectionism in world rice markets has had a particularly negative impact on the U.S. rice industry for various reasons. First, the U.S. is the leading world exporter of japonica rice which has been the most severely affected by protectionistic policies of foreign rice producing and consuming countries. Second, the U.S. rice industry is highly dependent on sales into a highly thin world market. Over 50% of the rice produced in the United States is exported. Consequently, trade and price distorting measures by foreign rice importers and exporters have a particularly significant impact on the U.S. rice industry. Finally, U.S. agriculture, and the rice sector in particular, historically has been much less protected than the rice sectors of other exporting and importing countries. The consequence has been that the U.S. rice market has been forced to absorb a disproportionate share of the increased variability, reduced trade, and lower prices resulting from the protectionistic actions of other countries. Before the 1985 Farm Bill, the traditional U.S. policy reaction was to legislate producer price floors through the non-recourse loan and acreage reduction programs to stem the erosion of profitability in the U.S. rice industry. Government holdings of rice increased in response leading to increased emphasis on food aid and other surplus disposal operations. The U.S. policy efforts to offset negative pressures on

Table 3. Impact of Liberalization on Rice Exporting Countries

Country	Percent World Exports	Imports from U.S.			Total Exports	
	%	1988	Impact a/	GATT	1988	Impact b/
		Mil \$			Mil \$	
Thailand	37.9	0	0	Y	1400	0
Pakistan	7.4	0	0	Y	330	0
EC12	7.2	91	+	Y	29	+
China	5.1	0	0	N		
Viet Nam	4.1	0	0	N		
Burma	3.3	0	0	Y		
Australia	3.0	1	0	Y		
India	2.4	0	0	Y	160	0
Uruguay	1.9			Y		
North Korea	1.3	0	0	N		
Argentina	1.1	0	0	Y		
Taiwan	1.0	0	0	N	23	+
Egypt	0.8	0	+	Y		
Indonesia	0.5	10	0	Y	0	0

a/ Rice imports from United States could increase by at least \$5 million (or at least 10 percent if present trade is under \$5 million) if the import policy or constraint were removed. A "+" indicates this could occur.

b/ Rice exports could decrease 50 percent or more if government assistance was removed. A "+" indicates this could occur.

Source: USDA (1990a).

Table 4. Impact of Liberalization on Rice Importing Countries

Country	Percent Imports from U.S.				Total Imports	
	World	-----		-----		
	Imports	1988	Impact a/	GATT	1988	Impact b/
	%	Mil \$			Mil \$	
EC-12	9.6	91	+	Y	29	+
Iran	6.5	0	0	N		
China	6.1	0	0	N		
Iraq	4.6	199	0	N		
USSR	4.6	0	0	N		
Bangladesh	4.0	0	0	Y		
Saudi Arabia	3.9	100	+	N	181	+
India	3.1	0	0	Y	160	0
Senegal	3.0	18		Y		
Ivory Coast	2.7	3		Y		
Malaysia	2.7	0	0	Y	83	0
Eastern Europe	2.1	0	+	Y		
Nigeria	2.1	0	+	Y	0	+
South Africa	2.1	33	+	Y	61	0
Indonesia	1.6	10	0	Y		0
Sri Lanka	1.6	0	0	Y		
Viet Nam	1.5	0	0	N		0
Cuba	1.5	0		Y		
UAE	1.2	3	+	N	88	0
Brazil	1.2	0	+	Y		
Syria	1.0	0		N		
Philippines	1.0	43	+	Y		+
Peru	1.0	6	+	Y		+
Canada	1.0	41	+	Y		0
Madagascar	0.9	1		Y		
Kuwait	0.7	2	+	Y	52	0
Mexico	0.5	1	+	Y	1	+
Japan	0.0	0	+	Y		+
South Korea	0.0	0	+	Y	0	+

a/ Rice imports from United States could increase by at least \$5 million (or at least 10 percent if present trade is under \$5 million) if the import policy or constraint were removed. A "+" indicates this could occur.

b/ Rice imports could decrease 50 percent or more if government assistance was removed. A "+" indicates this could occur.

Source: USDA (1990a).

world price through the price support program, however, provided U.S. export competitors the opportunity to undersell the U.S. on world markets and to expand their production and exports. The U.S. share of world rice trade, consequently, dropped from about 23% in 1980 to 15% by 1985 (Figure 1).

Together with other trade enhancing features, the U.S. marketing loan program enacted in the 1985 Farm Bill allowed U.S. market prices of rice to fall below producer support levels, boosted the competitiveness of U.S. rice in world markets, and helped spur a rebound in the U.S. share of world rice trade to over around 20% in the late 1980s (Figure 1). In essence, the U.S. enacted a Farm Bill intended to retaliate against the protectionistic policies of importing and export competing countries in world rice trade. The cost, however, has been substantial. The U.S. Treasury, and ultimately U.S. taxpayers, is paying the cost of attempting to undo the effects of extensive and long-standing protectionistic acts by many other countries.

KEY RICE ISSUES FOR CONSIDERATION IN RICE TRADE NEGOTIATIONS

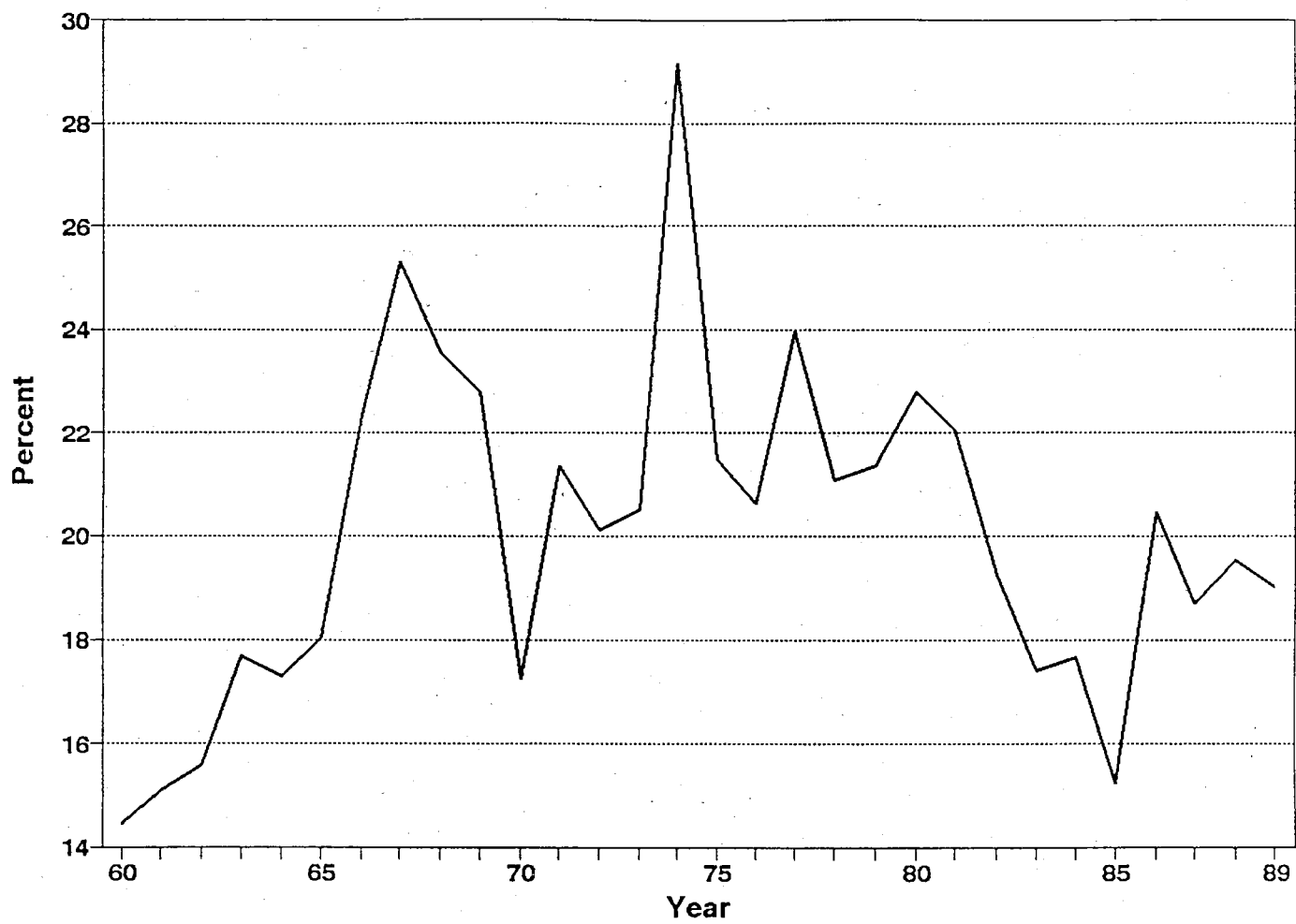
Although successful to some extent, U.S. rice trade expansion efforts continue to be dwarfed by the protectionistic policies of its rice trading partners and competitors. Consequently, an important part of U.S. strategy for recouping competitiveness in world markets has been to negotiate trade barrier reductions with other rice producing and consuming countries. Successful negotiations will require that special attention be paid to at least four groups of key issues: 1) targeting the specific policies of specific countries that are most highly trade distorting, 2) GATT vs. Non-GATT country issues, 3) developed vs. less developed country issues, and 4) conditions particularly characteristic of world rice markets that may require special treatment of rice in trade negotiations.

Targeting the Most Trade Distorting Policies in the World Rice Market

Virtually all rice importing and exporting countries intervene to some extent in their rice markets, distorting the volume and value of rice traded in the world. Government intervention is relatively minor in some countries such as Thailand, for example. More commonly, however, governments like that of Japan intervene heavily in the functioning of their rice markets. Although protectionism is practiced in nearly every rice consuming and producing country in the world, several policies by key countries account for a large share of the distortions in world rice markets. Such policies of U.S. rice export competitors and importing countries are discussed in turn in this section.

U.S. Export Competitors

Five countries have accounted for more than 75% of world rice exports in recent years: Thailand, the United States, Pakistan, the EC-12, and China (Table 2). In the last year, however, Viet Nam has once again emerged as a major rice exporter. The policies of these countries have the most potential for distorting world rice exports. Direct export subsidies by only one group of countries, the European Community, are a particular problem and an important target for negotiation. At the same time, a few of the smaller rice exporting countries move rice into export markets at a loss (i.e.,

Figure 1. U.S. Share of World Rice Exports, 1960-89

dumping) through state trading agencies. Only about 30% of world rice exports, however, are handled by state trading agencies (Table 5).

Thailand

Though a major rice exporter, Thailand accords its rice producer relatively little protection as indicated by a calculated Producer Subsidy Equivalent¹ (PSE) for rice of only 5% (Table 2). Until 1985, Thailand restricted its rice exports. This policy was abandoned in 1985 at about the time that the new U.S. Farm Bill was enacted. Thailand does subsidize the cost of rice production inputs, particularly irrigation. Thailand also maintains a ban on rice imports which is only relevant in periods of severe internal rice shortages (USDA, 1990a). The U.S., in contrast, does not ban or restrict rice imports in any way. On the whole, Thailand policies likely contribute relatively little to world rice market distortions.

Pakistan

Pakistan is the third largest rice exporting country in the world and controls exports through a state export monopoly. As indicated by a highly negative PSE, the net effect of Pakistani rice policy, along with the impact of an overvalued currency, is a severe tax on producers (Table 2). Output stimulating policies of subsidies for the use of fertilizer, water, and credit are far outweighed by the negative effects of the implicit export restrictions imposed. Because they tend to provide more foreign market opportunities to other exporting countries rather than less, Pakistani rice policies also appear to be of relatively little concern to the U.S. rice industry.

The European Community

The EC-12 is the fourth largest exporting "country" in the world and the only major U.S. export competitor to subsidize rice exports explicitly (Table 2). The EC export restitution scheme, however, is mainly a consequence of the high level of internal support provided to domestic rice producers. The protection provided to EC rice producers is the highest in the world among rice exporting countries as indicated by a PSE of 56%. A recent USDA study estimates that the value of U.S. rice exports would increase by at least \$5 million if EC-12 export policies were eliminated (Table 3). Consequently, a primary target for negotiations is EC rice price supports. If price supports were eliminated, there would be no need for export restitutions. The difficulty, of course, is that rice price support operations are only one part of a massive Common Agricultural Policy covering all aspects and all commodities produced in the 12 member countries of the European Community. It is not likely that rice could be isolated from other commodities in trade negotiations with the EC.

China

China is the fifth largest rice exporting country. Chinese rice policies, however, like those in Pakistan, severely tax domestic rice producers. Although China also provides input assistance and infrastructure support to its domestic rice industry, the export-restricting, price-depressing effects of domestic policies clearly dominate as evidenced by a highly negative PSE (Table 2). Exports are completely controlled by the Chinese government providing some potential for periodic switches to

¹ A Producer Subsidy Equivalent is a summary index intended to measure and compare the relative levels of protection provided to producers of a given commodity across countries. The PSE is a measure of the direct and indirect transfers of income from the government and/or consumers of that commodity to producers as a percent of the value of domestic output of that commodity.

Table 5. World Rice Trade Handled Through Private Traders and State Trading Agencies, 1987-89.

Category	Imports ^a (%)	Exports ^b (%)
Private Traders	22.8	69.0
State Trading Agencies	77.2	31.0
TOTAL	100.0	100.0

^a Includes imports of the top 29 rice importing countries accounting for 71.9% of total world rice imports in 1987-89 (see Table 1).

^b Includes exports of the top 15 rice exporting countries accounting for 96.0% of total world rice exports in 1987-89 (see Table 2).

export subsidization in periods of severe foreign exchange constraints or other circumstances. Chinese domestic policies as they current affect the world rice market also seem to have relatively little effect on world rice markets.

Viet Nam

A major world rice exporter prior to World War II, Viet Nam has apparently returned to that role with a dramatic increase in rice exports from only 97,000 mt in 1988 to over 2.0 million mt in 1990, thrusting it into third place behind the U.S. in export volume. The surge in exports is largely the result of a significant increase in export licenses and an increase in the authorized volume of exports which has created previously unavailable, significant profit opportunities from rice sales to foreign customers. Through aggressive pricing, Viet Nam has taken lower quality markets from Thailand. Viet Nam currently maintains a 5% tax on rice exports. Although the re-emergence of Viet Nam as a major competitor in world rice markets is shifting world trade patterns, the shift is primarily the result of less rather than more distortions in the world rice market. As Viet Nam continues to improve its rice export marketing system and procedures, the outlook is for continued growth in Vietnamese rice exports.

Rice Importing Countries

In contrast to the relatively few countries exporting rice, 29 countries account for a little over 70% of world rice imports (Table 1). Another 67 small importing countries account for the remainder, only 34 of which are members of GATT. The top five rice importing countries account for only about a third of world rice trade. The key targets for negotiation with rice importing countries include 1) state trading agencies, 2) direct import controls, 3) domestic price supports, and 4) rice producer subsidies.

State Trading Agencies

The most pervasive importing government intervention mechanism is the monopolization of imports. Nearly 80% of world rice imports was handled by official state trading agencies in 1987-89 (Table 5). In other words, state monopolies were one of the participants in at least 80% of all rice trades in recent years. As noted earlier, only a little over 30% of world rice exports were handled by state trading agencies. Although government import monopolization does not necessarily result in a distortion of world trade and prices, the potential certainly exists in many cases. Such agencies can be easily used to restrict imports given unforeseen changes in internal political conditions or in the rice supply/demand balance in the country. Government monopolization of imports by an individual country accounting for a small portion of world trade, of course, will have a minimal effect on world markets. Import restrictions imposed by the state trading agencies of many small trading countries, however, could well result in a major aggregate distortion in world rice markets. Of the 29 largest importing countries (Table 1), only seven do not control imports through a state trading agency (the EC-12, South Africa, the United Arab Republics, Syria, Canada, Madagascar, and Kuwait).

Direct Import Controls

The use of direct import tariffs is also widespread among rice importing countries. Notably, no country accounting for over 4% of world rice trade imposes a tariff on its rice imports. Nevertheless, a number of countries, including Senegal, Sri Lanka, Brazil, Syria, the Philippines, Peru, Mexico, and Japan, impose import tariffs in excess of 20% of the border price. Many smaller importing countries utilize import tariffs as a part of their overall rice policy. Several importing countries have strict quotas or outright bans on imports of rice. Some of these countries, such as Japan, South Korea, and Nigeria, would likely become major rice importers if the restrictions were eliminated. The European Community, the largest single rice importing entity, uses a variable levy to control rice imports. The most trade-distorting direct import control policies include:

- the variable levy of the European Community;
- the import bans of Japan, South Korea, and Nigeria; and
- the import tariffs of Japan, Bangladesh, India, Senegal, Malaysia, Indonesia, Sri Lanka, Brazil, Peru, Syria, Nigeria, Madagascar, Mexico, and the Philippines among others.

Domestic Price Supports and Production Subsidies

Importing countries make extensive use of policies to support and promote domestic rice production (Table 1). Price and income supports, input subsidies, and similar policies have a negative effect on import volume. Nearly all importing countries operate some type of domestic policy that promote domestic rice production to the detriment of imports. The direct, aggregate impact of these policies may well account for more of the existing restrictions on world rice trade than any of the more explicit trade control policies implemented by rice importing countries. These policies are part of the package of trade distorting policies being negotiated under the auspices of GATT. It is unlikely, however, that such policies will be completely eliminated or even that significant progress will be made to eliminate these well entrenched domestic policies as a result of the ongoing GATT negotiations. Any significant reduction in support prices and subsidies provided to producers in importing countries will likely come only through bilateral negotiations with a large number of large and small rice importing countries.

GATT vs. Non-GATT Country Issues

Of the total rice imported during 1987-89, only about 60% was imported by GATT member countries (Table 1). In fact, five of the top seven rice importing countries (Iran, the People's Republic of China, Iraq, the USSR, and Saudi Arabia) are not members of the GATT. In contrast, nearly 90% of the rice exporting countries are GATT signatories. This suggests that the ongoing MTN talks can be expected to be only a part of the solution to the persistent distortions in world rice trade. Even if the talks were successful in eliminating all policies in participating countries affecting rice trade, at least 40% of world rice trade would still be subject to trade distorting policies. The volume and value of rice traded in the world would still be a long way from competitive, free market levels. The implications for trade negotiations are the following:

- Policies of U.S. export competing countries can be much more comprehensively addressed in the current MTN talks than those of rice importing countries. Consequently, the trade distorting policies of exporting countries are a key negotiation objective in the current GATT talks.
- Although many of the trade distorting policies of rice importing countries can be addressed in the GATT negotiations, significant movement to truly free trade in world rice markets will likely require bilateral negotiations with numerous small importing countries that are not members of GATT. Because much of the distortion in world trade for which importing countries are responsible result from domestic policies which are not likely to be comprehensively or successfully treated in the GATT negotiations, bilateral negotiations with many importing country GATT members will also be necessary if world rice markets are to be successfully liberalized.

Less Developed Country Issues

The distinction between developed countries (DCs) and less developed countries (LDCs) has always been an important issue in MTN talks. Since its beginning, GATT has extended special and deferential treatment to LDCs. For example, balance-of-payments and infant-industry protection considerations traditionally have been used to justify quantitative restrictions imposed by LDCs. LDCs are also not subject to limitations on export subsidies for processed products that applies to DCs. Waivers to the GATT most-favored-nation (MFN) rules tend to benefit LDCs. LDCs account for nearly two-thirds of world rice imports (Table 6) and 60% of the imports of the 10 largest rice importing countries in the world (Table 1). Only slightly more than 20% of world rice imports are by DCs with the remainder going to centrally planned economies (CPEs). Since CPEs generally are not GATT participants, then if LDCs continue to receive deferential treatment under GATT, at most about 20% of world rice imports would be potentially subject to the full range of trade liberalization requirements that may come out of the GATT negotiations.

Several rice-exporting LDCs have joined with some rice-exporting developed countries in making proposals for liberalizing trade in the current GATT negotiations. These LDCs feel that the protective policies of importing countries have reduced their ability to compete in world rice markets. Several studies provide evidence that a reduction in import protectionism would result in a significant increase in foreign exchange earnings by LDC rice exporters (Cramer, et. al; Tyers and Anderson; Roningen and Dixit).

Table 6. Rice Trade of Developed, Developing, and Centrally Planned Countries

Item	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
	1,000 Metric Ton									
Rice Importing Countries:										
Developed	4354	2770	2706	2468	3250	3713	2551	2412	2705	2709
Developing	7787	6892	7161	8866	7581	6693	7298	7668	7855	8168
Centrally Planned	1748	1607	759	862	992	1651	1782	1518	2125	1595
World	13889	11269	10626	12196	11823	12057	11631	11598	12685	12472
Rice Exporting Countries:										
Developed	5419	4607	4131	4156	3559	3427	4295	4014	4441	4137
Developing	6888	6743	6366	7364	6162	7678	7516	7095	8275	7770
Centrally Planned	995	814	1024	1512	1363	1249	1483	1137	1425	1100
World	13302	12164	11521	13032	11084	12354	13294	12246	14141	13007
	Percent									
Rice Importing Countries:										
Developed	31.3	24.6	25.5	20.2	27.5	30.8	21.9	20.8	21.3	21.7
Developing	56.1	61.2	67.4	72.7	64.1	55.5	62.7	66.1	61.9	65.5
Centrally Planned	12.6	14.3	7.1	7.1	8.4	13.7	15.3	13.1	16.8	12.8
World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Rice Exporting Countries:										
Developed	40.7	37.9	35.9	31.9	32.1	27.7	32.3	32.8	31.4	31.8
Developing	51.8	55.4	55.3	56.5	55.6	62.1	56.5	57.9	58.5	59.7
Centrally Planned	7.5	6.7	8.9	11.6	12.3	10.1	11.2	9.3	10.1	8.5
World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Gudmunds and Webb, (1989).

Implications of these LDC issues for trade negotiation include the following:

- The trade distorting policies of many rice-exporting LDCs are likely to be addressed in the current GATT negotiations.
- Unless the U.S. is aggressive and successful in negotiating bilateral reductions in trade barriers with a large number of LDCs, there will likely be little true liberalization of world rice markets regardless of the outcome of the GATT talks. Unfortunately, the trade distorting policies of most rice-importing countries may escape adequate consideration in the ongoing GATT talks because LDCs make up a large portion of those countries not participating in GATT. Also, the trade distorting policies of LDCs will likely continue to receive deferential treatment in the negotiations resulting in little redress in the pattern of distortion in world rice markets.
- For the developed countries, the benefits of applying GATT rules equally across all countries (including LDCs) in terms of added access to those markets must be weighed against the likely negative impacts on the stability and growth rates of the agricultural and overall macro economies of the LDCs.

Special Characteristics of World Rice Markets

There are a number of characteristics peculiar to world rice markets that must be considered in designing a successful trade negotiation strategy for rice that are either of less concern or not relevant for many other commodities. The world market for rice is generally characterized as thin, unstable, and stratified (by rice type and quality). The *thinness* of the market results from the small volume of rice that is traded relative to world production. Only about 3% of world rice production enters world trade (Table 7). Thus, normal year-to-year fluctuations in rice production of no more than 2% to 3% can generate substantial price variability in world rice markets. The proportion of world rice production that enters world trade is much lower than that of all other major agricultural commodities including wheat (20%), corn (25%), soybeans (28%), and cotton (32%). Another important consequence of the thinness of the world rice market is the high transaction costs involved in trading rice. Buyers must search for available supplies of rice. There is no rice "supermarket" as there is in the United States for wheat.

World rice trade is also highly *unstable*. Because about 90% is produced in Asia and half is not irrigated, the world rice supply depends on the uncertain and often unfortunate timing of the Asian monsoon season. Moreover, because rice is the basic staple food in many countries, governments around the world intervene heavily in rice markets in an attempt to stabilize domestic prices and assure adequate supplies for their populations usually through some form of trade controls. In effect, much of the instability generated by supply shocks and demand fluctuations in many rice producing and consuming countries is forced onto the world market by these protective government policies. Rice prices were among the most volatile in world markets. The calculated coefficient of variation,² a commonly used measure of relative variation, for the world rice price (f.o.b. Bangkok) was double that of cotton and substantially higher than that of corn, soybeans, and wheat between 1961 and 1989 (Table 7). Rice producers and consumers in relatively less protected markets like the United States bear an unfair, large share of the burden of the intensified volatility in world rice trade and prices.

² The coefficient of variation relates the standard deviation of a series to its mean and presents the results as a percentage that can be used for comparison purposes.

Table 7. Comparison of Variability in World Crops, 1961-89

Item	Rice	Cotton	Corn	Soybeans	Wheat
Export/Production:					
Percent	2.79	31.51	14.21	27.97	20.17
Coef Variation	10.21	10.73	24.67	13.3	11.73
Change in Production:					
Percent	2.85	2.45	3.38	5.91	3.06
Coef Variation	136.59	396.25	288.27	184.09	259.86
Deflated Prices: a/					
Mean	441.91	182.47	4.07	337.81	5.15
Coef Variation	44.27	21.93	26.58	30.82	27.88

a/ Deflated by wholesale price index.

Source: OECD (1990); Gudmunds and Webb (1989).

The U.S. rice industry is vulnerable to volatility in world markets because such a large portion of domestic production is traded on world markets.

Instability in the world rice market is also related to the limited number of countries that export rice. Instability is reflected both in frequent short-run price fluctuations of 10% to 20% between marketing years as well as in the uncertainty that traders face in negotiating contracts. The top four net-exporting countries of Thailand, the United States, Pakistan, and China account for 70% of world trade. Even so, supplies from these four countries vary considerably from year to year. With the exceptions of the United States, Pakistan, and Thailand, exports by other countries are generally the result of occasional surpluses in domestic production. Except for China, all major exporting countries are relatively small producers. Only the U.S., however, has sufficient excess supplies to assume the role of residual supplier. The instability of world rice markets means that the buying and selling of rice on the world market can be risky with prices fluctuating more than those of other commodities (Siamwalla and Haykin).

The *stratification* of the world rice market according to rice types intensifies the effects of the thinness and volatility of the market. There are four types of rice produced in the world: glutinous, aromatic, indica, and japonica. The bulk of world rice production and trade is of the indica variety. Different countries tend to prefer different rice types, however. Consequently, the markets for each rice type are substantially separated, limiting the degree of substitution that can occur among rice types in world rice consumption. The markets for each rice type, therefore, are even more thin and volatile than the aggregate market may appear. World trade of each of the various rice types is affected to varying degrees by price changes and conditions in the markets for the other rice types. In addition, there are limits to the substitution in production among the various types and classes that can occur. Japonica and indica rice varieties dominate U.S. rice production.

Implications of these particular characteristics of the world rice market for rice trade negotiations, therefore, include the following:

- *The particular process chosen for liberalizing world rice trade will have a major impact on the extent to which the volatility of world rice markets is also lessened. A process which essentially allows for increased trade volumes without substantial change in the types of policies used to control trade will be highly ineffective in reducing the high degree of volatility in the world market. This is because a large proportion of world rice trade is controlled by non-tariff barriers, such as import quotas and bans and state trading agencies. Such non-tariff barriers to trade essentially sever the links between world markets and prices and internal markets and prices in the countries using such policies. As a consequence, even if a greater import volume is allowed for by a country with an import quota, for example, the internal markets are still protected from variability in world rice markets. A Japanese offer to allow some percentage increase in the allowable volume of imports, for example, may lead to greater U.S. exports of rice to Japan but will not require the Japanese to absorb any portion of world price and trade variability or, therefore, to help reduce market variability in the rest of the world. This is a particularly significant issue for the U.S. rice industry because of the extremely high degree of variability in world rice markets and the large share of that variability that the U.S. must bear.*
- *Because complete and immediate elimination of non-tariff barriers is not likely to result from current negotiations, the next best trade liberalization process for world rice markets would involve as a first step the transformation of all non-tariff barriers into their tariff equivalents, i.e., "tariffication". The next step would be a gradual reduction in tariff levels over a number of years. This essentially has been the target of U.S. negotiation efforts in the current round of GATT talks. The advantage of*

such a process of "tariffication" is that not only can a greater world trade volume be achieved but also volatility in world markets can be substantially reduced. Although perhaps of relatively little importance for some U.S. export commodities, settling for a process of trade liberalization which allows greater U.S. exports but maintains the status quo in the types of policies used by other countries to control their trade would continue to penalize rice in terms of having little impact on volatility in world rice markets.

- *As a corollary to the previous point, the primary negotiation target among policy types is non-tariff barriers.* Although tariffs restrict trade, they do not increase world market volatility nor shift the burden of adjusting to volatility in the market to less protected markets like the United States as is the case with non-tariff barriers. Even if non-tariff barriers cannot be totally eliminated, the tariffication of such barriers transfers the variability of world prices into the importing market, making it more responsive to world market conditions. This interjects more price stability into the world rice market such that all nations share in the price risk rather than just a few exporting countries.
- *Liberalization of world rice trade could have regional implications for the U.S. rice industry.* Removal of import barriers by japonica rice consuming countries, such as Japan, South Korea, and Taiwan would primarily benefit the California rice industry where japonica is the major rice variety grown. On the other hand, removal of trade barriers in the EC-12 and other indica importing countries would primarily benefit rice production in southern U.S. states where indica varieties tend to dominate.

SUMMARY AND CONCLUSIONS

Government intervention in rice trade and production is pervasive and contributes to the high level of observed volatility in the world markets. With few exceptions and with varying degrees of comprehensiveness and success, all countries intervene in their rice markets. Collectively, these policies have lowered world prices and reduced world rice trade levels. The world trade and price depressing effects of growing protectionism in world rice markets has had a particularly negative impact on the U.S. rice industry. Although successful to some extent, U.S. rice trade expansion efforts continue to be dwarfed by the protectionistic policies of its rice trading partners and competitors. Consequently, an important part of U.S. strategy for recouping competitiveness in world rice markets has been to negotiate trade barrier reductions with other rice producing and consuming countries. The most important issues for these negotiations include the following:

- *Exporting Country Policy Targets:* The primary exporting country policy target for negotiations is EC rice price supports. Elimination of the EC price supports would eliminate the need for the associated export restitution program. Although elimination of the export restitutions would be helpful, the EC would still be free to protect its producers through some other mechanism. The real target, therefore, is the EC rice price support program.
- *Importing Country Policy Targets:* There are several specific, high priority targets for trade negotiations among importing country policies, including the following in no particular order:
 - 1) Government monopolization of trade (state trading agencies) in all but 3 of the 20 largest U.S. rice importing countries;

- 2) Specific direct import controls including the variable levy of the European Community, the import bans of Japan, South Korea and Nigeria, and the import tariffs of Japan, Bangladesh, India, Senegal, Malaysia, Indonesia, Sri Lanka, Brazil, Peru, Syria, Nigeria, Madagascar, Mexico, and the Philippines among others;
- 3) Production subsidies provided to producers in many importing countries, including Senegal, the Ivory Coast, Malaysia, Indonesia, the Philippines, and Peru among others.

GATT vs. Non-GATT Country Issues: About 40% of the rice traded on world markets was imported by countries that are not members of GATT. In contrast, nearly 90% of the rice exporting countries are GATT signatories. This means that even if the ongoing GATT talks were successful in eliminating all policies of participating countries that affect world rice trade, at least 40% of world rice trade would still be subject to trade distorting policies. Implications include the following in no particular order:

- 1) Policies of U.S. export competing countries can be much more comprehensively addressed in the current MTN talks than those of rice importing countries and, therefore, are of primary importance in those talks;
- 2) Significant movement to truly free trade in world rice markets will require bilateral negotiations with numerous small importing countries that are not members of GATT. Because much of the distortion in world trade is not likely to be comprehensively or successfully treated in the GATT negotiations, bilateral negotiations with many importing country GATT members will also be necessary if world rice markets are to be successfully liberalized.

LDC Rice Trading Country Issues: Many of the trade restricting policies of LDCs receive special and deferential treatment under GATT. LDCs account for nearly two-thirds of world rice imports. Only slightly more than 20% of world rice imports are by DCs with the remainder going to centrally planned economies (CPEs). If LDCs continue to receive deferential treatment under GATT, at most about 20% of world rice imports would be potentially subject to the full range of any GATT trade liberalization requirements. Implications include the following in no particular order:

- 1) The trade distorting policies of rice-exporting LDCs are likely to be addressed in the current GATT negotiations;
- 2) The trade distorting policies of many rice-importing countries may escape adequate consideration in the ongoing GATT talks because LDCs make up a large portion of those countries not participating in GATT;
- 3) LDC trade policies will likely continue to be treated deferentially in the negotiations resulting in little redress in the pattern of distortion in world rice markets;
- 4) Unless the U.S. is aggressive and successful in negotiating bilateral reductions in trade barriers with a large number of LDCs, there will likely be little true liberalization of world rice markets regardless of the outcome of the GATT talks;
- 5) For the developed countries, the benefits of applying GATT rules equally across all countries (including LDCs) in terms of added access to those markets must be weighed

against the likely negative impacts on the stability and growth rates of the agricultural and overall macro economies of those developing countries.

Special Considerations for Rice Trade Negotiations: There are a number of characteristics peculiar to world rice markets that must be considered in designing a successful trade negotiation strategy for rice that are either of less concern or not relevant for many other commodities. The world market for rice is generally characterized as thin, unstable, and stratified (by rice type and quality). The thinness of the market results from the small volume of rice that is traded relative to world production. The instability results from the thinness of the market, highly variable weather patterns in Asia, and extensive government intervention in the market. The stratification of the market relates to the distinct types of rice produced and consumed in the world. Different countries tend to prefer different rice types, however. The markets for each rice type are substantially separated, limiting the degree of substitution that can occur among rice types in world rice consumption. The markets for each rice type, therefore, are even more thin and volatile than the aggregate market may appear. Implications of these special characteristics of world rice markets for rice trade negotiations include the following:

- 1) The particular process chosen for liberalizing world rice trade will have a major impact on the extent to which the volatility of world rice markets is also lessened. A process which essentially allows for increased trade volumes without substantial change in the types of policies used to control trade will be highly ineffective in reducing the high degree of volatility in the world market. This is because a large proportion of world rice trade is controlled by non-tariff barriers, such as import quotas and bans and state trading agencies. A Japanese offer to allow some percentage increase in the allowable volume of imports, for example, may lead to greater U.S. exports of rice to Japan but will not require the Japanese to absorb any portion of world price and trade variability or, therefore, to help reduce market variability in the rest of the world.
- 2) Because complete and immediate elimination of non-tariff barriers is not likely to result from current negotiations, the next best trade liberalization process for world rice markets would involve as a first step the transformation of all non-tariff barriers into their tariff equivalents. The next step would be a gradual reduction in tariff levels. The advantage of such a process, referred to as "tariffication," is that not only can a greater world trade volume be achieved but also volatility in world markets can be substantially reduced.
- 3) The primary negotiation target among policy types, therefore, is non-tariff barriers. Although tariffs restrict trade, they do not increase world market volatility nor shift the burden of adjusting to volatility in the market to less protected markets like the United States as is the case with non-tariff barriers.
- 4) *Liberalization of world rice trade could have regional implications for the U.S. rice industry.* Removal of import barriers by japonica rice consuming countries, such as Japan, South Korea, and Taiwan, would primarily benefit the profitability of rice production in California where japonica is the major rice variety grown. On the other hand, removal of trade barriers in the EC-12 and other indica importing countries would benefit rice production in southern U.S. states where indica varieties tend to dominate.

REFERENCES

- Childs, N.W., "The World Rice Market - Government Intervention and Multilateral Policy Reform," U.S. Department of Agriculture, ERS Staff Report AGES 9060, September 1990.
- Cramer, G.L., E.J. Wailes, S. Phillips, "The Impact of Liberalizing Trade on the World Rice Market: A Spatial Model Including Rice Quality," University of Arkansas (forthcoming).
- Cramer, G.L., E.J. Wailes, S. Phillips, and J. Goroski, "The Impact of Liberalizing Trade on the World Rice Market," Selected Paper, Annual Meetings of the American Agricultural Economics Association, Vancouver, British Columbia, Canada, August 1990.
- Gudmunds, K. and A. Webb, PS&D View: Users Manual and Database, Economic Research Service, U.S. Department of Agriculture, September 1989.
- Harridge, M., D. Pearce, and M. Walker, "World Agricultural Trade Reform: Implications for Australia." paper presented at Australian Economics Congress, Canberra, 1988.
- Organization for Economic Cooperation and Development (OECD), Agricultural Policies, Markets, and Trade: Monitoring and Outlook 1990, Paris, France, 1990
- Roning, V. and P. Dixit, "Economic Implication of Agricultural Policy Reform in Industrial Market Economies," paper presented at International Agricultural Trade Research Consortium Symposium, Annapolis, August 1988.
- Schuh, G.E., "After Bretton-Woods: The Impact on Agriculture," Paper presented at Conference on Food and Agricultural Policy Issues, Spring Hill, March 1978.
- Siamwalla, A. and S. Haykin, The World Rice Market: Structure, Conduct, and Performance, International Food Policy Research Institute, Washington, June 1983.
- Slayton, T., "Some Pieces of the World Rice Puzzle," Rice Outlook and Situation Report, USDA, ERS, March, 1984.
- Tyers, R. and K. Anderson, "Liberalizing OECD Agricultural Policies in the Uruguay Round: Effects on Trade and Welfare," Journal of Agricultural Economics, 30(2), Australia, May 1986.
- U.S. Department of Agriculture, Global Review of Agricultural Policies, Economic Research Service, May 1988.
- U.S. Department of Agriculture, Trade Policies and Market Opportunities for U.S. Farm Exports: 1989 Annual Report, Foreign Agriculture Service, 1990a.
- U.S. Department of Agriculture, World Grain Situation and Outlook, Foreign Agriculture Service, Selected Issues, 1990b.
- U.S. Department of Agriculture, Production, Supply, and Demand for Rice, Foreign Agriculture Service, Unpublished manuscript, 1990c.

Webb, A.J., M. Lopez, and R. Penn, Estimates of Producer and Consumer Subsidy Equivalents, Economic Research service, U.S. Department of Agriculture, Statistical Bulletin No. 803, April 1990d.

