

MSSD DISCUSSION PAPER NO. 51

RICE TRADE LIBERALIZATION AND POVERTY

Ashok Gulati and Sudha Narayanan

Markets and Structural Studies Division

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MSSD Discussion Papers contain preliminary material and research results, and are circulated prior to a full peer review in order to stimulate discussion and critical comment. It is expected that most Discussion Papers will eventually be published in some other form, and that their content may also be revised. This paper is available at <http://www.cgiar.org/ifpri/divs/mssd/dp.htm>

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ABSTRACT

Rice is the lifeline of almost 70% of the world's poor residing in Asia, where more than 90% of world rice production and consumption takes place. Rice trade liberalization therefore has tremendous implications for poverty. The world rice market is highly distorted, partly because of the high degree of intervention in rice markets across the world. While poor countries such as Thailand, Vietnam, and India tend to “disprotect” rice sectors, the rich countries of East Asia (Japan and Korea), Europe, and the United States heavily support their rice producers. As a result, there is great diversity in domestic rice price levels, with very high prices in the latter countries and very low prices in the former. Trade liberalization would thus result in flows from these poorer Asian countries to East Asia and Europe. This is predicted to have beneficial effects for poverty, through producer price increases and second-round effects (wages, employment, and investment) in exporting countries, and to augment short-term food security in poor importing countries.

However, if rice trade liberalization is to contribute to poverty alleviation in developing countries, there is a need to streamline distortionary agricultural policies, particularly in developed countries. Also important are “behind the border” reforms in developing countries aimed at reducing transactions costs for farmers, rationalizing input pricing policies, ensuring access to risk management institutions and safety nets, improving access to food, and combating adverse environmental conditions. In the long run, rice trade liberalization might have to be

coupled with initiatives to enhance agricultural productivity and rural economic growth to be able to make a dent in poverty.

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RICE TRADE LIBERALIZATION AND POVERTY¹

Ashok Gulati ² and Sudha Narayanan ³

1. BACKDROP

Ever since the Uruguay Round Agreement on Agriculture (URAA) kickstarted trade liberalization in agriculture in 1995, there has been considerable concern in developing countries about its implications for poverty. This is particularly true of rice, which is the lifeline of almost 70% of the world's poor residing in Asia. Asia alone accounts for more than 90% of world rice production of 397 million tonnes in 2001 (FAOSTAT 2002) and an overwhelming share of world consumption. Rice trade liberalization therefore has tremendous implications for poverty.

This paper explores this important link between rice trade liberalization and poverty, seeking specifically to respond to two broad questions: What would be the effect of freer trade in rice on trade flow patterns? How will rice trade liberalization and consequent rice price equalization across countries influence the prevalence of poverty in the poorer economies? In doing so, this paper focuses primarily on Asia. The paper is

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organized in six sections. The second section, which follows, characterizes the world rice market. The third section maps briefly the policies affecting the rice sector across different countries. The fourth section assesses the competitiveness of the major players in the world rice trade. Based on the relative competitiveness of different countries, it offers a prognosis of the change in trade patterns that liberalization would entail. The fifth section attempts to gauge the implications for poverty drawing on existing literature to do so. The sixth section identifies areas that need specific attention to see how poorer countries can best take advantage of opportunities in rice trade.

2. CHARACTERIZING THE WORLD RICE MARKET

The world rice market has been expanding over the years, particularly rapidly in the 1990s. Currently, around 24 million tonnes of rice are traded annually, close to double the volume in 1990. However, the world rice market is still characterized by thinness, volatility, and segmentation. Despite growing absolute volumes, trade constituted only about 4.5% of world rice production from 1961 to 2000, compared with 18% for wheat and 13.6% for maize. This is partly attributable to the fact that much rice is consumed where it is produced and partly because of the nature of policies pertaining to rice sectors across the world.

The rice market also tends to be highly concentrated. During the 1990s, around 80% of the exports came from just six countries—Thailand, Vietnam, India, China, Pakistan, and the United States (Childs 2001). The import side has comparatively more

players. However, here too there are a few large importers and many small ones. Among the major importers in Asia in the recent past have been Indonesia, the Philippines, Bangladesh, Malaysia, East Asia (Japan and Korea), and the Middle East. The thinness and concentration of world rice markets imply that changes in production or consumption in major rice-trading countries have an amplified effect on world prices. Volatility is also due to frequent shifts in the sources of supply and demand.

Finally, the world rice market is also highly segmented by type and quality. Trade flows are thus determined by what varieties are demanded and the ability of countries to supply them. For instance, while East Asia's demand for japonica is serviced by the U.S., Australia, and China, Africa's indica demand is met primarily by India and Thailand. Europe, on the other hand, obtains its high-quality grain from South Asia while importing indica rice from the U.S. While Middle East imports are primarily basmati from South Asia, most trade in South America is in paddy supplied by the U.S., mainly because of locational advantages. Indica rice accounts for a bulk of global rice trade (75–80%), followed by japonica (10–12%) and aromatic rice such as basmati and jasmine (10%), with glutinous rice accounting for the rest. There are limited substitution possibilities across varieties in both production and consumption, but they tend to be less for the latter given strong regional preferences in consumption.

While these three features of thinness, volatility, and segmentation set the context for any discussion on rice trade liberalization, perhaps the most important feature of the rice market is that it is among the most distorted of all cereals, with countries—developed and developing—using a plethora of controls both externally and domestically. These

policies, in fact, collectively contribute to the thinness and volatility of the world market. What are these policies and how do they affect the relative competitiveness of different countries?

3. OVERVIEW OF RICE POLICIES IN DIFFERENT COUNTRIES

Rice sectors across the world attract a high level of government intervention. This is true of both developed countries and developing countries, which are rather cautious in liberalizing rice trade for the sake of food security. Indeed, rice is regarded as a strategic commodity in many of these countries. But the policies in these two sets of countries differ in a fundamental way. While the former have high producer prices to maintain farmer incomes, the latter have tended to tax producers to ensure the availability of cheap staples for the mass of poor consumers.

RICE POLICIES IN RICH COUNTRIES

The wealthier countries use a combination of domestic market interventions and border protection or export subsidies depending on whether they are importers or exporters.

Border protection through bans, high tariffs, and state trading enterprises (STE) is widespread among wealthy rice importers such as Japan, Korea, and the EU. Both Japan and Korea, which, in the past, banned imports of rice, committed to minimum access quotas under Annex 5 of the URAA; this partially opened up imports of rice, albeit with

markups on imports.⁴ Although with tariff rate quotas (TRQ), over-quota imports are now possible, in practice, both countries use high over-quota tariffs—491% for grains other than wheat in Japan and 89% for rice in Korea in 1999 (Elbehri et al 1999)—which virtually prevents any imports above the quota. Moreover, both Japan and Korea control imports through monopoly STEs, Japan’s Food Agency being among the world’s largest importer STEs. The EU import regime for rice seeks essentially to protect its rice millers. Although the EU was required to tariffify its import duties and reduce them by 36% in 2000-01, the Blair House agreement enabled the EU to use a variable levy on husked and milled rice imports subject to the ceiling of the UR Bound rate (Nielsen 2002). The preferential quotas of the European Union are another factor that undermines market access.

Domestically too, rich countries heavily support rice producers through a combination of market price interventions and direct payments. Among OECD countries, the producer support estimate (PSE)⁵ was 76% in 1997-99, the highest among agricultural commodities. While, in Japan and Korea, 70–90% of farm receipts were due to policy interventions, the figure was lower at 10–30% in the EU and U.S. Japan and Korea rely particularly heavily on market price support—which accounted for about 88%

⁴ Japan’s quota was to have risen from 4% of base period (1986-88) consumption to 8% by 2000, expanding at 0.8% per annum. In 1999, Japan opted for tariffication, which meant that over-quota imports were now permitted but growth of the minimum-access quota was halved to 0.4% of base-period consumption. Korea too opted for a quota system, the quota being 1% to 2% of base-period consumption during the first five years, eventually rising to 4% over the next five years.

⁵ Briefly, PSEs refer to the share of transfers to producers in the total value of gross receipts, i.e., the share of farm receipts brought about by policy.

and 96% of the PSE, respectively, during 1997-99 (Nielsen 2002). The U.S., in contrast, uses direct payments, while the EU has shifted away from market price support in favor of direct payments only recently.

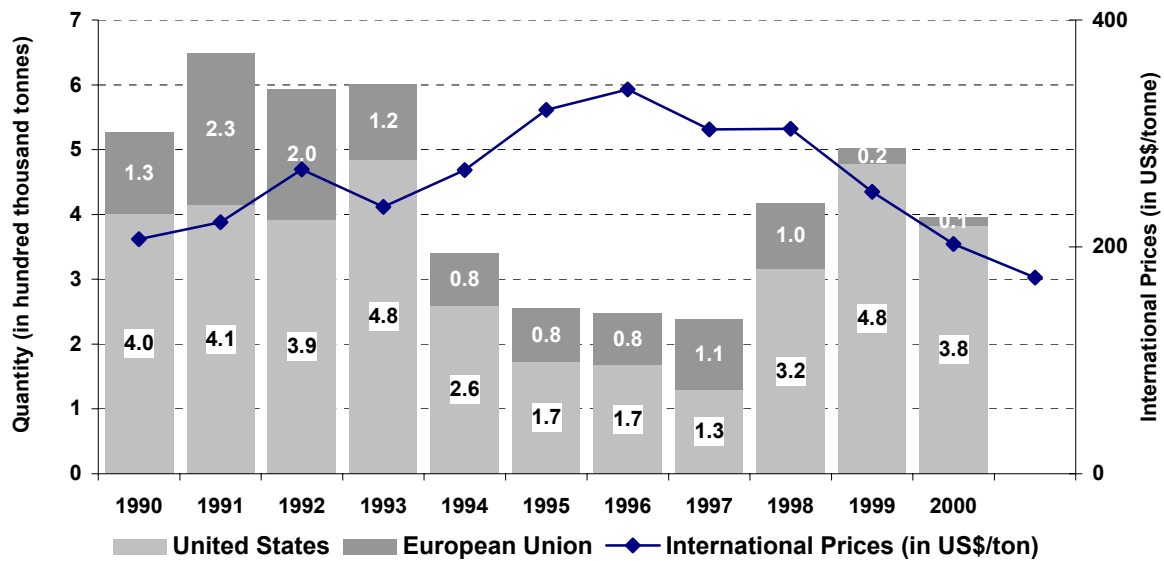
Finally, developed-country exporters also use export subsidies to promote their exports. Although export subsidies on rice constituted less than 1% of all notified export subsidies in agriculture during 1995-99, given the thinness of rice markets, even this could be significant. While the EU accounted for 95% of these subsidies, the U.S. accounted for the rest. In fact, as much as 65% of the EU's total rice exports enjoyed export subsidies, as high as US\$322 per tonne on average from 1995 to 1998.

The U.S., on the other hand, uses export credit guarantees extensively to promote rice exports. Further, both the U.S. and EU channel significant quantities of rice through food aid on concessional terms. In the triennium ending in 2000, of the total U.S. rice exports, more than 22% either benefited from credit guarantees or constituted concessional food aid (USDA 2001). Interestingly, the volume of rice exported as food aid in general is inversely related to world prices, which is counterintuitive, as one would expect net-importing countries to need more food aid when world prices are high (Fig. 1).

To sum up, while developed-country importers such as Japan and Korea insulate their rice markets through heavy border protection, exporters such as the U.S. and EU resort to export support to make their rice more competitive—both groups maintaining high domestic prices for producers.

Figure 1—Inverse relation between prices and food aid: Rice food aid by the United States and European Union in the 1990s.

Fig. 1. Inverse relation between prices and food aid: rice food aid by the United States and European Union in the 1990s. Source: Data on Food Aid Shipments from FAO; prices from USDA.



RICE POLICIES IN THE POOR COUNTRIES

In contrast to the wealthy countries, poorer developing countries in South and Southeast Asia have been taxing rice producers, with domestic prices often less than three-fourths of world prices. Domestic controls are aplenty and diverse. Most have some form of price support system. In the past, these support prices have been way below the international prices, as have been the domestic wholesale prices. Public procurement and government stocking are undertaken in almost all these countries, for public distribution

of food grains (India), as buffer, or for market interventions (Vietnam, Thailand, China, and Indonesia).

Importantly, stocking limits on private traders, levies on millers, and movement restrictions are pervasive. In parts of India, for instance, levies on millers can be as high as 75%. India also had movement restrictions until recently. Vietnam too had internal movement restrictions between the north and south before 1997, trade between regions being under monopoly control of the state. In China, domestic marketing continues to be the exclusive responsibility of state grain agencies. In Indonesia, too, it was only after 1998 that some effort was made to limit the role of BULOG (parastatal organization) in domestic trade.

Many developing-country exporters also tend to restrict and control exports for the sake of food security. Exports of common rice from India were banned until 1994. Exports were not permitted in Vietnam until 1987 and, even after that, Vietnam continued with export quotas until as recently as May 2001. Despite recent changes, the government continues to play a large role in rice exports so that, in 1999, only 4% of Vietnam's rice exports were by the private sector (Nielsen 2002). Thailand, traditionally a rice exporter, also had an export quota until 1986, along with an export tax called the "rice premium." Ironically, over the years, this has come to be replaced by subsidized export credit.

Despite the marked shift toward less trade controls, state trading enterprises continue to play a dominant role in many of these countries, particularly among importers. Indonesia's BULOG, among the largest agricultural importing STEs in the

world, retained monopoly control over imports until 1999. However, even in exporting countries such as Vietnam, India, and China, imports have often been routed through the STEs, with a limited role for private traders, if at all. Other importers such as Malaysia use high tariffs to protect their relatively inefficient rice sectors. Recent years have seen regional trade agreements contributing to progress in liberalization in Asia. For example, under the ASEAN Free Trade Agreement (AFTA), all ASEAN member states have agreed to a lifting of all quantitative restrictions on rice trade by 2010. However, typically in these developing countries, progress toward greater trade liberalization is constrained by the dynamics of political economy considerations, given the importance of rice.

Thus, for rice, the high degree of intervention across countries has led to great diversity in rice price levels across countries and has created huge distortion in world markets and trade flows. In fact, it is acknowledged that rice markets are so distorted that countries compete less on productivity gains or efficiency and more on policy levers that make their exports competitive (Tabor et al 2002). Under the circumstances, the critical question is: How would world rice markets change with liberalization? Who would gain and who would lose?

4. RICE TRADE LIBERALIZATION: WHICH WAY WOULD THE RICE FLOW?

To find out who stands to gain from rice trade liberalization, it is essential to examine the competitiveness of the major rice-trading countries. One way of doing this is through the use of nominal protection coefficients (NPCs)—a competitiveness indicator that encapsulates the effects of diverse policies on the wedge between domestic and world prices. NPCs for selected countries for 1998 and 1999 indicate much diversity, with Japan at the high end of the spectrum with an NPC of 6.5 (Fig. 2; Nielsen 2002). Korea is also becoming uncompetitive, as are the United States and the European Union. On the other hand, countries such as China, India, Vietnam, and Pakistan, with NPCs less than 1, are competitive.

The case of Thailand and Indonesia deserves elaboration. It must be remembered that the NPCs can vary widely for each country and are particularly sensitive to movements in world prices and exchange rates. With Indonesia's currency depreciating the way it did in 1997-98, although Indonesia is a major importer, it is becoming competitive. Similarly, Thailand is highly competitive, but the decline in world prices combined with a hike in domestic paddy pledging rates has caused Thailand to seem uncompetitive in 1998-99.

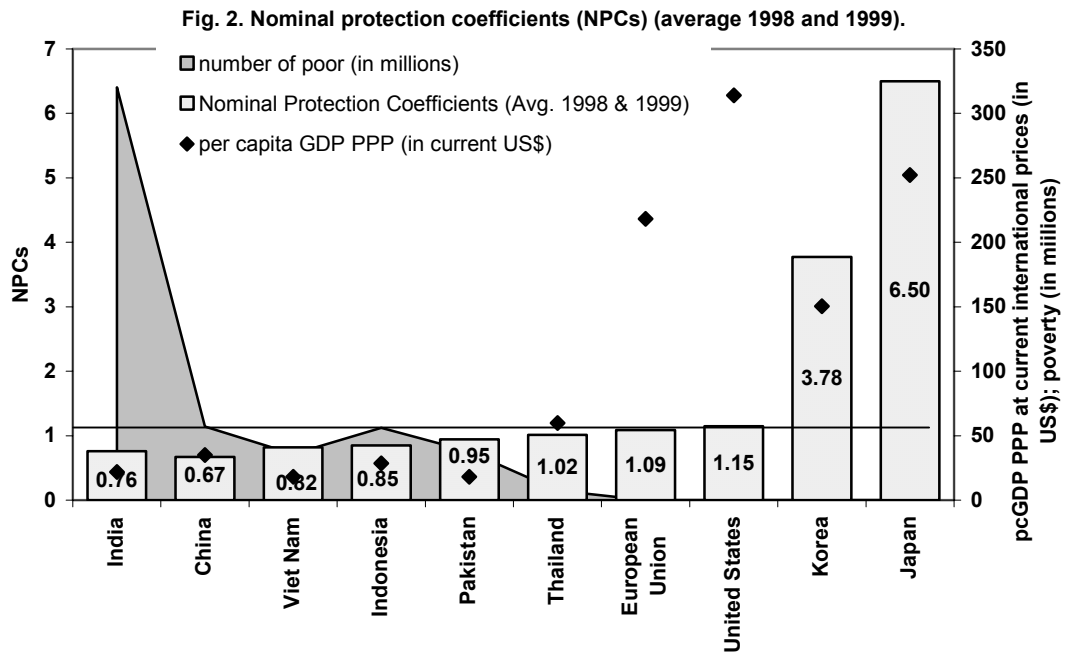
What the NPCs indicate in terms of domestic price levels is that, relative to world prices, domestic prices range from very high in Japan, Korea, the United States, and EU

to very low in China, India, Vietnam, and Thailand (where domestic prices either approximate world prices or are even lower).

More significant perhaps is the link between poverty and price levels. It is evident that the countries with the highest domestic prices are the wealthiest countries, while those that are competitive in rice tend to have not only lower levels of per capita income but also a large number of poor people (Fig. 2). For instance, about 44% of the world's 1.2 billion poor live in South Asia and around 24% in East Asia, whereas, in terms of per capita income, countries such as the United States are 15 times better off than those in South Asia. This relationship reflects the historical tendency for poor countries to tax their agricultural sectors (in the interests of availability of cheap food for consumers) and for rich countries to protect their farmers, as elaborated in the previous section.

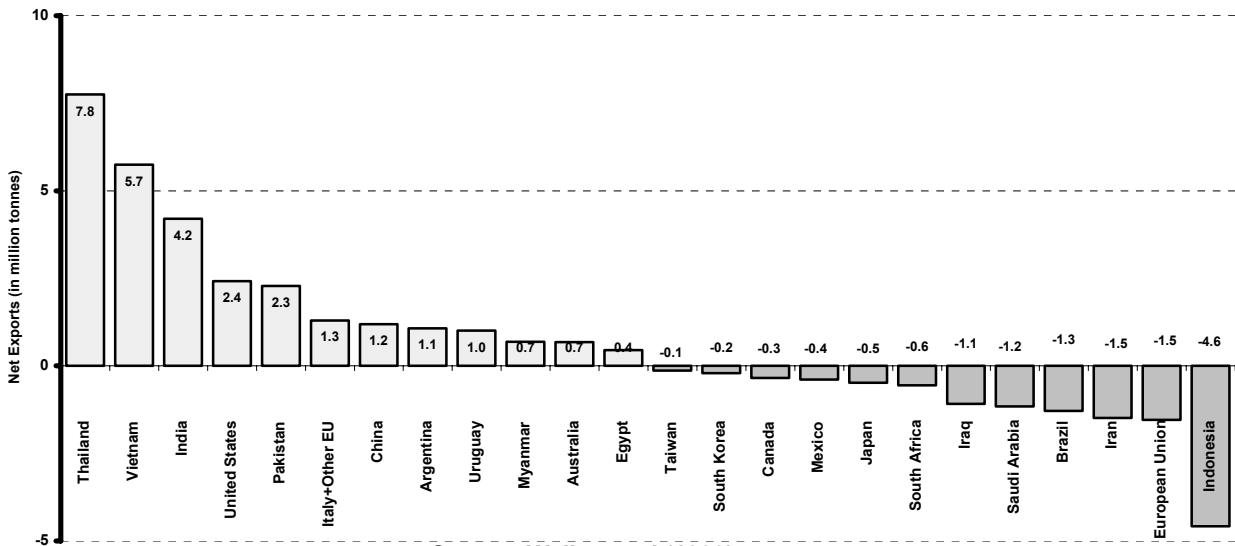
Given the competitiveness of different countries, what would happen with rice trade liberalization? Prima facie, in a completely free trade scenario, rice should flow from countries where prices are lower, that is, rice is not protected relative to world prices, to where prices are higher, where rice is accorded some protection. Generally speaking, this would imply rice flows from poorer to richer countries. Thus, it can be expected that poorer countries such as Vietnam, Thailand, and India would be important net exporters while the richer countries such as Japan, Korea, and the EU would be net importers. However, some poorer countries in Asia would also be net importers, notably the Philippines, Indonesia, and Malaysia, just as richer countries such as the U.S. are predicted to remain net exporters.

Figure 2—Nominal protection coefficients (NPCs)(Average 1998 and 1999)



Source: NPCs from Nielsen (2002), poverty and per capita GDP from World Development Indicators (2002).

Figure 3—Net exports of selected countries in 2010 (Arkansas Rice Model).



Source: Wailes et al (1999).

The Arkansas Global Rice Model, for instance, predicts that, in 2010, major net exporters of medium- and long-grain rice would be Thailand, Vietnam, and India, followed by the United States and Pakistan (Fig. 3), reinforcing existing trade patterns. China would also emerge as a net exporter (Wailes et al 2000). At the other end of the spectrum, the major net importers would continue to be Indonesia, along with countries in the Middle East, East Asia, South America, and the European Union, plus Canada and South Africa.

5. IMPLICATIONS FOR POVERTY

How do rice trade liberalization and the consequent predicted changes in trade flows affect poverty in developing countries? To answer this question, it is important to recognize that the link between incomes and rice trade flows operates at different levels and in complex ways.

The immediate *impact effect* is through change in price levels. In a competitive country, trade liberalization would trigger exports and domestic prices would rise to equalize with world prices. This would benefit the net sellers of rice, while net buyers of rice face higher prices. In a country that is not competitive, imports would flow in to pull down the high domestic prices to world levels, to the advantage of consumers. It is important to remember that there may be both winners and losers in each country and the net gains are difficult to predict.

However, there seems to be clear empirical evidence that countries that are competitive stand to gain substantially from trade liberalization. Several studies have predicted beneficial effects on poverty from rice trade liberalization in these countries. Deaton (1989), for instance, observed that an increase in rice prices in Thailand would benefit all rural households. More recently, Minot and Goletti (1999) predicted, using a spatial equilibrium multimarket model, that the elimination of the rice export quota in Vietnam would raise prices by 14 to 22% on average, and can be expected to reduce both the incidence and depth of poverty.

While one might argue that only net sellers in these exporting countries benefit, this is not necessarily true when one considers that significant second-round effects

operate. For instance, apart from the direct effect of rice trade liberalization on rice farmers, there could also be a lagged effect operating through agricultural wages and employment. Higher rice prices in exporting countries could stimulate production, which can be expected to increase demand for agricultural labor, driving up wages or offering more gainful employment. Thus, while an increase in rice prices may adversely affect net buyers of food in the short run, agricultural laborers and small farmers who supplement their income from agricultural wage earnings could gain through wage and employment increases in exporting countries. This price-wage linkage has been found to hold true for Thailand. In a study of a proposed rice export tax, it was found that the consumption benefit of lower rice prices as a result of an export tax was outweighed by a negative income effect of the driving down of wages for unskilled labor (Warr 2001). Given that the rural poor often derive about 40% of their income from unskilled employment, export liberalization would benefit net buyers as well. A similar linkage between rice prices and wages is apparent in Bangladesh (Rashid 2002, Ravallion 1990) and India (Fig. 4).

Another effect of changes in relative prices in the second round is on investment. As prices in competitive countries increase, terms of trade shift in favor of agriculture, thus spurring private investment, which in turn has a positive effect on growth. This is apparent in India, for instance, where changing terms of trade in favor of agriculture brought about growth in private investment to an extent to which it more than compensated for a decline in public investments (Fig. 5).

Fig. 4. Wage and Rice Prices in India

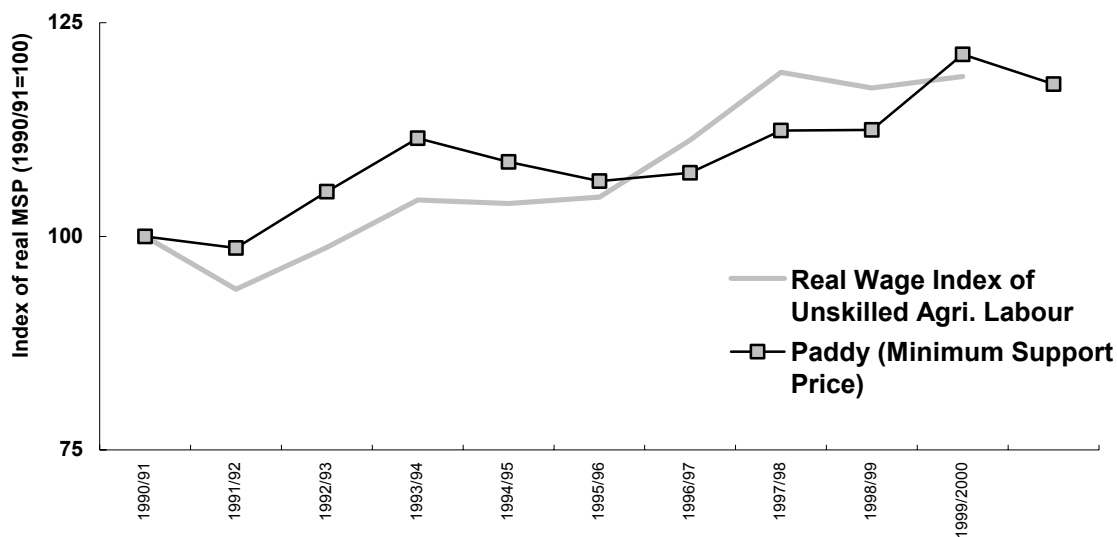
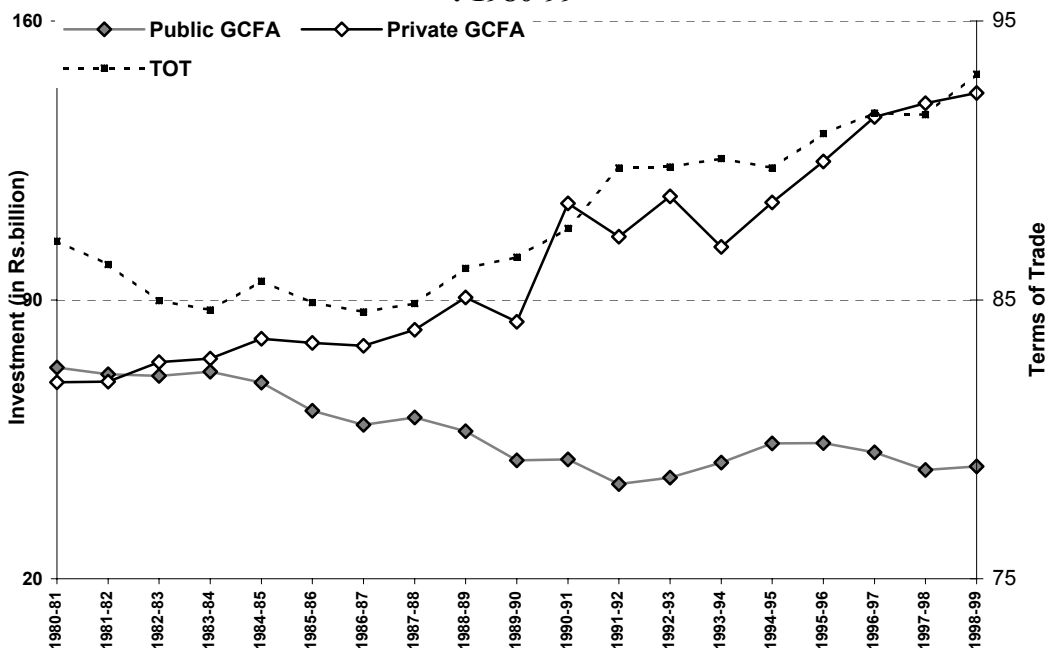


Figure 5: Terms of Trade and Investment in Agriculture in India : 1980-99



Source: Gulati and Hoda (2002)

Further, in the long run, there are also strong linkages between the farm and nonfarm sector in most countries. In Asia, a one-dollar increase in agricultural income resulted in an additional 80 cents for nonagricultural income for local enterprises, whereas, for selected countries in Africa, it was estimated to be more than two dollars (Delgado et al 1998). Much of the multiplier effect was driven primarily by household consumption demand and production linkages predominantly within the rural farm and nonfarm economies (Hazell and Hojjati 1995). Rice trade liberalization could then trigger increased rice production in some of the poorer-country exporters, helping to create more dynamic rural economies overall. Because most poverty in these countries is in rural areas, often with a share as high as 75%, a more dynamic rural economy would make substantial contributions to poverty alleviation.

While the positive link between rice trade liberalization and poverty discussed above pertains mainly to exporting countries, rice-importing countries can also benefit. However, because rice-importing countries tend to be far more diverse than exporting countries, it is critical to make a distinction between the richer importing countries and the poorer importers. As outlined in the fourth section, the richer importers such as Japan and the European Union, in protecting their producers, maintain domestic prices far higher than world prices, implicitly taxing consumers. Import liberalization in this case would benefit the net consumers in these countries. In the poorer countries, imports have always been viewed with some misgivings since they are feared to be a threat to domestic food security and livelihoods. However, contrary to popular opinion that trade

liberalization would be inimical to food security and poverty alleviation, some research shows that trade liberalization in importing countries, by providing a “low-cost rapid response mechanism” to increase domestic supply and stabilize prices, can help enhance food security. For instance, following Bangladesh’s poor harvest of rice in 1997, and floods the following year, trade liberalization measures in rice both in Bangladesh itself and in neighboring India made possible imports from India by private traders, which contributed significantly to Bangladesh’s short-run food security (Dorosh 2001). The legitimate concern that trade liberalization cannot be relied upon for a country’s long-run food security needs to be examined not so much through trade policies as it should be through behind-the-border policies such as the provision of safety nets, food stamp systems, and food-for-work programs, thus enhancing productivity and rural economic growth (Dorosh 2001).

6. TRANSLATING POTENTIAL GAINS INTO REALITY: THE HURDLES

It seems clear from the literature that rice trade liberalization can help to alleviate poverty in poor developing countries. The fact remains, however, that, despite embarking on a liberalization process in 1995, the current trade environment for rice continues to be highly restrictive. A shift in trade patterns along the lines predicted would require a significant change in policies of both developed and developing countries.

Rice trade liberalization has been slow, but changes are occurring. In exporting countries, the bans and quotas that limited exports are increasingly being lifted as demonstrated in India, Vietnam, Thailand, etc. Given progressive liberalization in the

exporting countries, the greatest problems they face are the policies of developed countries—market access, domestic support, and food aid (and other export competition measures).

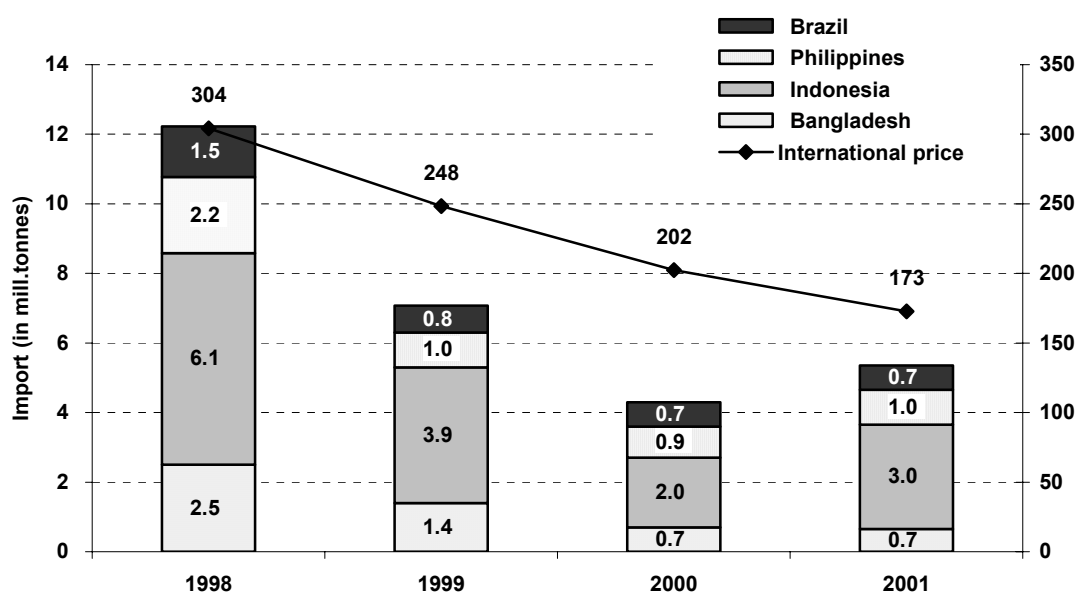
The experience of the late 1990s in particular suggests that all is not well with rice trade liberalization. The crux of the problem has been the huge price decline starting in 1997. This trend persisted and, by 1999, world prices of rice declined to their lowest level in almost 20 years. This has triggered problems for several rice-producing countries, even efficient producers such as Thailand, Vietnam, and India.

The reason for the price decline is a combination of several factors. International rice prices faced severe downward pressure following the East Asian financial meltdown in June 1997 that weakened demand from Asian importers (Fig. 6; Childs 2001). The crisis affecting Latin America also reduced global agricultural commodity prices, consumption, and trade (Wailes et al 2000). In 1998, however, the drop in prices was almost reversed by a sudden increase in world trade to record levels. This resulted from severe crop damage from El Niño in Southeast Asia and South America. El Niño, for instance, caused Indonesia to become a net importer of about 6 million tonnes, over seven times its 1996 level. By 1999, however, the declining trend in world prices was reinforced, as production in importing countries affected by El Niño recovered. Improvement in domestic rice production meant that net imports declined subsequently to normal levels (Childs 2001).

On the supply side, this was also the time when exporting countries had bumper harvests. Significantly, in 1998, the world rice market saw the entry of China as a major

exporter with a supply of more than 3.5 million tonnes. This was largely the result of the Grain Bag Policy that was instituted at the provincial level to ensure self-sufficiency, which augmented supplies and stocks in the country (Childs 2001, Nielsen 2002, Wailes et al 2000).

Figure 6: Declining Demand in Major Rice Importers 1998-2001



Source: FAS/USDA. Figure for 2001 projected

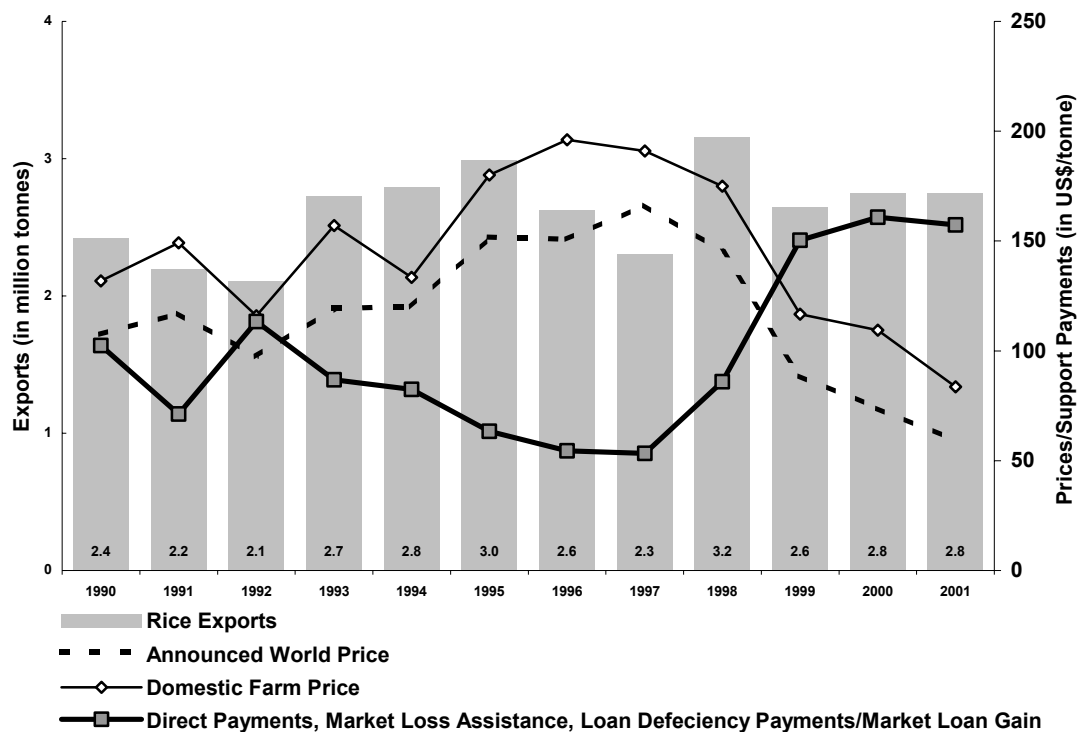
Notes: Rice trade is on milled basis

International Prices are fob Bangkok Thai white milled 5% broken

However, above all, there has been another important but oft-neglected factor reinforcing the decline in prices, namely, domestic policies in the developed countries. The case of the U.S., a major exporter, is particularly relevant here. The United States uses several instruments to support the rice sector—with three kinds of payments forming

the core of domestic rice policy. First, direct payments under the production flexibility contract (PFC) are given to participating farmers. In crop year 2001, payments to rice contract holders totaled US\$41.34 per tonne. Second, another program assists farmers when prices are low, as part of the marketing assistance loan or loan deficiency program (LDP) payments. Payments under this program are based on the difference between announced world prices and the national average loan rate for rice, when the former drops below the latter, and called marketing loan gains (MLG). In 2001, this amounted to \$68.90 per tonne. Third, over and above this, since 1997, following a decline in actual world prices, the Congress has sanctioned payments termed market loss assistance to enable farmers to tide over periods of low prices. These payments, often equaling the rate under the PFC, have continued for four consecutive years. These payments, accruing to those eligible for PFC payments, were to the tune of \$47.05 per tonne. This system of support payments implies that a rice farmer in the U.S. earned as much as \$157.28 per tonne in government assistance during 2001, which far exceeded the differential between the higher U.S. domestic prices and lower international prices (Fig. 7).

Figure 7: How US domestic policy propped exports



Source: Basic data from ERS/USDA Rice Yearbook, 2001

Note: US exports rough, brown rice and fully milled rice; figures are for milled rice (including brown rice) calendar years from FAS/USDA.

The announced world prices for rice are for its rough form and hence significantly lower than international prices for white milled rice.

The direct payments under Production Flexibility Contracts allows farmers to plant any crop on their contract acreage Here the assumption is that the farmer who receives PFC payment for rice also cultivates rice.

Announced world price for 2000 has been intrapolated

Such domestic policies have important ramifications for the international market. Given that the U.S. is relatively less competitive in rice than countries such as Thailand, Vietnam, and India, the adjustment to low world prices would ideally have been borne by U.S. farmers. However, direct payments, particularly the market loss assistance payments, which are essentially countercyclical, enable its farmers to sustain or maintain existing levels of production and exports even when prices were declining, and make U.S. farmers artificially competitive. Given that these payments have been disbursed for four consecutive years, farmers in the U.S., rather than fully responding to market conditions, would respond partly to the expected benefits of future payments (USDA 2002). Consequently, U.S. domestic rice policies have the effect of deflecting the shock of low prices back to the international market.

Thus, while the U.S. has succeeded in maintaining its level of exports, the burden of adjustment to low world prices fell on the more competitive countries such as Thailand, Vietnam, and India. These countries had to cope with low demand, blunted competitiveness caused by extraordinarily low prices, and the massive accumulation of foodstocks. In fact, in Thailand, Vietnam, and India, extraordinarily, domestic support prices were higher than world prices (Tabor et al 2002, Poapongsakorn 2002). In Thailand, by February 2002, stocks had built up to more than 4.2 million tonnes under the paddy-pledging scheme. Similarly, in India, rice stocks have burgeoned to about 25 million tonnes in 2002 (Tabor et al 2002). This has prompted several of these countries to resort to export competition measures. Vietnam, faced with weak demand, is reported to export rice at a loss of \$10–35 per tonne alongside subsidized credit to exporters for the purchase of 1 million tonnes of rice at a minimum price. Similarly, Thailand subsidized

export credits worth \$487 million under the export support fund specifically for rice (Tabor et al 2002). India has also begun exporting rice from public stocks at a loss.

The current situation illustrates quite clearly that, if rice trade liberalization is to contribute to poverty alleviation in developing countries, there is a need to streamline distortionary agricultural policies, particularly in developed countries such as the U.S., the EU, and Japan. In an integrating world market, a country's competitiveness depends on a range of factors—such as exchange rate and domestic price movements, but importantly also on other countries' domestic policies. A critical factor would therefore be the active participation of developing countries in multilateral trade negotiations aimed at domestic agricultural policy reform in developed countries. With liberalization, one could expect a higher share of production to be traded while the complete integration of large rice producers such as China and India would also bring more stability to world rice markets.

The extent to which rice trade liberalization can be an instrument of poverty alleviation in developing countries, however, is subject to some caveats.

Chief among these is the critical role played by behind-the-border reforms in developing countries. If rice trade liberalization is to be part of a strategy to reduce poverty, there would have to be domestic reform in these poor countries aimed at reducing transaction costs for farmers, ensuring access to risk management institutions and safety nets, and improving access to food. In the long run, rice trade liberalization might have to be coupled with initiatives to enhance agricultural productivity and rural economic growth to be able to make a dent in poverty.

Another important consideration is the environmental costs associated with rice trade. It is often believed that exporting rice is like exporting scarce water resources. Already, the practice of intensive rice monoculture has caused problems of waterlogging, salinity buildup, nutrient depletion, etc., that have in turn resulted in stagnating or declining yields (Pingali et al 1997). Gains from rice trade liberalization in poor developing countries could well be constrained by natural resource degradation.

Similarly, predictions of changes in rice trade flows cannot be considered in isolation of what happens in other crop sectors. Simultaneous liberalization across the board, which is the more likely event, could change the prognosis for rice significantly.⁶ Important in this context is the trend in countries such as Vietnam that have recently shifted to policies to limit area under rice in favor of maize by about 0.3 million ha. Such policy shifts in the larger scenario would have to be factored in as well.

Behind-the-border reforms assume greater significance in the context of these two issues. Environmental sustainability of rice systems would require deep reforms in input-pricing policies and also complementary policies pertaining to the environment. It is also important that government intervention in domestic markets ensure that these reforms do not offer perverse incentives to some crops over others in the interests of allocative efficiency.

⁶IFPRI's IMPACT 2020 Model, which considers 16 commodities, predicts a scenario quite different from the Arkansas Global Rice Model. The former suggests that, while Southeast and East Asia (13.5 million tonnes) and the United States (2.5 million tonnes) would be the major net exporters of rice, Sub-Saharan Africa (5.8 million tonnes) and West Asia and North Africa (5.1 million tonnes) would be the major net importers. It is interesting that South Asia is predicted to be a net importer (7.7 million tonnes) along with Latin America, the European Union, and former Soviet Union (Rosegrant et al 2001). In particular, India, which is predicted to be a major net exporter of rice by 2010 by the Arkansas Model, emerged a net importer of 0.3 million tonnes in 2020 (Rosegrant et al 2001).

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