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Agricultural Export Restrictions: Welfare Implications and Trade Disciplines

By Siddhartha Mitra And Tim Josling

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IPC finds practical solutions that support the more open and equitable trade of food & agricultural products to meet the world's growing needs.

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FROM IPC CHAIRMAN AND CEO

The dramatic commodity price increases seen in 2007 and 2008 triggered a record number of export restrictions, in particular for rice and wheat, which led in turn to even greater price hikes, and hindered sufficient and timely procurement of much needed food aid. Export restrictions — in the form of bans, quotas or taxes — are often imposed by governments as a means to promote domestic food security. Although they may bring some short-term relief to domestic consumers, economic analysis — as presented in this paper — clearly shows that their overall impact on the domestic economy as well as on the rest of the world is negative. IPC members have witnessed similar episodes in the past. In this paper, we suggest some alternative measures governments could undertake to safeguard food security. A crucial element is supply augmentation, which requires that strengthening the agricultural sector — in particular in developing countries — must become and remain a priority. We also offer some suggestions on how to craft improved trade disciplines on agricultural export restrictions since existing agricultural trade rules are primarily focused on the problems of exporters — high border protection, domestic support and export subsidies — and have largely ignored the importers' main problem, which is unreliability of supplies.

Given the uncertain fate of the Doha Development Round, it may appear unwise to place further expectations on the agricultural negotiations. Yet we believe that doing so could possibly help break a logjam: greater supply assurances could motivate import sensitive countries to undertake greater market access opening. We also float the idea of a separable "exporters' code" or "food security code," which could be pursued in case of a long-term suspension of the Doha Round: such a code would include self-restraint on both export subsidies and export restrictions.

IPC members believe there is an urgent need for an exemption from export restrictions for food aid procurement. It is no longer sufficient for the international community to consider the issue of food aid solely in the export competition pillar. Equally important is to consider a reliable approach to the impact of high prices on availability of food aid and in turn on poor countries and families.

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TABLE OF CONTENTS

(continued next page)

TABLE OF CONTENTS *continued*

EXECUTIVE SUMMARY[1]

The dramatic increase in commodity prices in late 2007 and early 2008 led many countries to impose export restrictions in an attempt to ensure domestic food security. Such export restrictions, in turn, led to further price increases by placing limits on global supply and undermining the level of buyer confidence. This paper examines export restrictions from two different but related angles: Section I examines the welfare implications of export restrictions, both for the country imposing such measures as well as for the rest of the world. Section II presents an overview of how export restrictions have been addressed in trade negotiations and agreements and examines other efforts to achieve greater market stability. As this paper shows, export restrictions have significant detrimental economic impacts but are not subject to meaningful trade disciplines. Alternative measures to protect food security must be explored, and more attention must be given to improving trade rules, as proposed in Section III.

Our analysis shows that all export restrictions — in the long as well as the short run — lead to a deterioration of welfare in both the country imposing such measures and the rest of the world.

Section I analyzes the rationale behind and consequences of export restrictions, which can take the form of embargoes/bans, licenses/quotas and taxes. Our analysis shows that all export restrictions — in the long as well as the short run — lead to a deterioration of welfare in both the country imposing such measures and the rest of the world. Outright export bans have the most detrimental impact, but the magnitude of welfare loss caused by different types of restrictions depends heavily on the price elasticities of demand and supply.

The recent high prices in world markets for many agricultural commodities have also brought treatment of export restricting practices in trade agreements back into the spotlight — as discussed in **Section II.** Importers have argued with compelling logic that trade rules are focused on the problems of exporters — high border protection, domestic support and export subsidies — and have largely ignored the importers' main problem, which is unreliability of supplies. The reason for this may be rooted in the way in which trade policy is negotiated, with exporters taking the lead. It may also be a function of historical experience, where low prices have been a more common problem than shortages. Section II examines the way in which export taxes and restrictions are treated in the GATT/WTO and the effectiveness of such disciplines during previous periods of high commodity prices. The WTO, through the GATT Articles, allows the use of quantitative restrictions and embargoes on agricultural exports if used temporarily to relieve shortages of "basic foodstuffs or other materials of importance to the exporting country." Export taxes are not bound in country schedules and have never been subject to agreed reduction. The result is an imbalance, as seen by several importing countries who argue that trade rules should take into account the difficulties that importers face when exporters restrict their supply on the world market, forcing up prices and threatening food security. The requirement in the WTO Agreement on Agriculture to notify such export restrictions has not been noticeably effective.

While the topic has not been high on the agenda, the Doha Round has offered an opportunity to strengthen disciplines on export restrictions, but the resulting provisions deal largely only with the length of time for which restrictions can be applied. Nevertheless, there are suggestions on the table for strengthening the current rules. These proposals are discussed and the prospects for adoption assessed. The paper continues with a discussion of plurilateral solutions to price instability that includes both international commodity agreements and regional approaches to these issues.

[1] This paper was presented at IPC's October 2008 plenary meeting for discussion. The authors wish to thank IPC members for their comments and their guidance on the recommendations listed in the paper.

Section III of the paper turns to policy recommendations. There are a number of alternative measures countries could implement to achieve food security without harming their producers and without triggering even higher global prices.

- Domestic demand management measures can offset the need for export restrictions, although they may sometimes imply a heavy fiscal burden.

- Innovative supply side measures, i.e. real or virtual multilateral grain reserves, or agricultural cooperatives raising money on the stock market, are worth exploring.

- Efforts should be made to boost agricultural production — particularly in developing countries — and augment global food supplies.

There are a number of alternative measures countries could implement to achieve food security without harming their producers and without triggering even higher global prices.

On the trade negotiation front, the paper concludes by exploring options available for restoring a balance between trade disciplines for exporters and those for importers. The present imbalance favors exporters and can certainly distort the distribution of benefits from the trade system. While there are steps that can usefully be taken in the bilateral, regional and plurilateral realm, multilateral disciplines will be most effective.

- An exemption from export restrictions for food aid procurement should be implemented as a matter of urgency.

- Any disciplines on export restrictions must address both quantitative restrictions and export taxes to be meaningful.

- If a DDA conclusion proves too difficult in the near future, an “exporters’ code” could be negotiated — both to safeguard the progress made in the export competition pillar and to address export restrictions. Such a code would include the ending of export subsidies, both direct and through food aid, export credit guarantees and state-trading entities, as well as a ban on export embargoes and a limit on export taxes.

SECTION I: WELFARE IMPLICATIONS OF EXPORT RESTRICTIONS

1. Rationale for Export Restricting Behavior

1.1 Definition and Taxonomy

Agricultural export restrictions constitute defensive measures implemented by economies to protect consumers or producers. They may take a wide variety of forms: export bans (embargoes), export taxes (simple and differential), export quotas, and export restricting measures of state trading enterprises. The motivations for export restrictions vary according to the type of product.

1.2 Motivations for Export Restrictions on Unprocessed Final Products

Export restrictions relating to products that are consumed in their raw form without much value added by processing — rice, wheat, etc. — are basically measures to protect consumers or to win their political support. Justifications for export restrictions on raw products include:

A. Food security. In many countries, rapid economic growth has resulted in a significant increase in purchasing power. Coupled with population growth, economic improvements have led to an increase in domestic food consumption, and governments have not been able to add substantially to buffer stocks. In certain cases, like rice in India, production has been characterized by extreme volatility. In 2002, rice production in India dipped alarmingly (see Mitra, 2008), which had a major impact on buffer stocks of rice. There was a decline of around 13 million metric tons from 2001 to 2002, with stocks reaching a low of 11 million metric tons. Moreover, with a per capita consumption of rice of around 80 kilograms per year, annual population growth of around 1.5 percent, and stagnation in yields, the slow rate of increase in area under rice cultivation was not enough to facilitate a recovery in the level of these stocks; by 2006 rice stocks had not increased in magnitude over their 2002 level.

Given the rising consumption needs of the nation, the government felt that the country did not have enough stocks to cushion unforeseen agricultural failures. This led to India imposing a ban on non-basmati rice exports in 2007 and basmati rice exports in 2008 (Mitra, 2008). The effect of the ban on buffer stocks has not been large, yet it is noticeable: reserves have gradually climbed up to 14 million metric tons.

Export restrictions to maintain food security are often imposed to counteract volatility exhibited by major food importers. Sudden import surges often divert produce from the domestic markets of exporters and might result in sudden food scarcity in the domestic economy. Such import surges might be caused by sharp appreciation of the importer's currency or devaluation of the exporter's currency (for instance, the devaluation of the Brazilian Real in 2001 and 2002 led to a sharp increase in its poultry exports from 2000 to 2002). Supply volatility due to climatic changes in importing countries might also be a reason for import surges. Yet another factor could be tariff reductions pursuant to trade agreements or multilateral liberalization.

B. Low domestic purchasing power combined with high commodity prices. This situation might create incentives for producers in an economy to export most of their production abroad, leading to low consumption levels at home. An example of this is the wheat export ban announced by Kazakhstan on April 15, 2008 (see Ellis, 2008 for details). In a statement, officials attributed the decision to the need to ensure that the requirements of the country's 15.5 million inhabitants were met, given a significant rise in prices in the world grain market and a shortage of food grain in the world.

C. Large gap between successive crops. In many countries, a large time gap exists between harvests of successive crops. For example, wheat is grown only once a year in India. Export restrictions/embargoes in this case are often advised, as the country needs to equip itself to meet consumption needs in the period between two crops. Excessive exports might lead to inadequate build up of wheat stocks and consequent shortages during the period when augmentation of supply is not possible through harvests.

D. **Political reasons.** Political economy factors can lead to a ban on exports. Politicians often try to curry favor with consumers before elections by imposing restrictions on exports, which then reduce prices and therefore the overall cost of living for consumers. Thus, even though wheat stocks have reached record highs in 2008, the Government of India has still not lifted the embargo on wheat exports (*Economic Times*, 2008).

E. **Financing government expenditure.** Export taxes on primary products can be a significant source of government expenditure (Suranovic, 2008). In Côte d'Ivoire export taxes on cocoa and coffee have contributed more than 10 percent of government revenue in each year since 1996.

F. **Other reasons**. In the 1980s and 1990s, Japan began importing rice from the U.S. and other countries, responding to pressure to allow access to its rice markets even though it did not require rice imports. These imports were mainly stocked in warehouses and not allowed to compete with Japanese farm produce so as to protect Japanese farmers (Bradsher and Martin, 2008b). WTO rules regarding whether such rice can be re-exported are ambiguous; thus Japan is sitting on a pile of rice while there is a shortage in many parts of the world.

The expected gains from export restrictions are often not realized in practice.

Note that while motivations A, B and C do indeed constitute important reasons for the implementation of export restrictions, the intended results might not be forthcoming. Export restrictions signal unprofitability of immediate sales to crop exporters/producers/sellers. Such signals often cause these economic agents to bide their time and indulge in practices such as hoarding or engaging in transactions in the futures market. Thus, the expected push in domestic supply often does not materialize; instead there is actually a likelihood that shortages will emerge in the market. In other words, the expected gains from export restrictions are often not realized in practice.

1.3 Motivation for Restrictions on Commonly Processed Agricultural Products

There are many agricultural products that are mainly consumed in their processed form. Horticultural products like tomatoes, pineapples and apples fall in this category, as do non-food products, such as wool and timber. The rationale for restricting exports of these is straightforward: by exporting these products in their raw form, a country foregoes the processing margin, which then accrues instead to the importing countries. By withholding raw products from the international market, a country can augment its production and exports of processed products and increase income generated from exports.

The rest of this section is structured as follows: Sub-Section 2 looks at the incidence and popularity of export restrictions. Sub-Section 3 defines various types of export restrictions and analyzes their impact on the domestic markets of countries implementing them using theoretical tools of demand and supply: consumer and producer surplus etc. Sub-Section 4 similarly looks at the impact of export restrictions on global markets, and Sub-Section 5 suggests a rigorous methodology for the computation of welfare change due to export restrictions, implements it, then presents and analyzes the results.

2. The Incidence of Export Restrictions

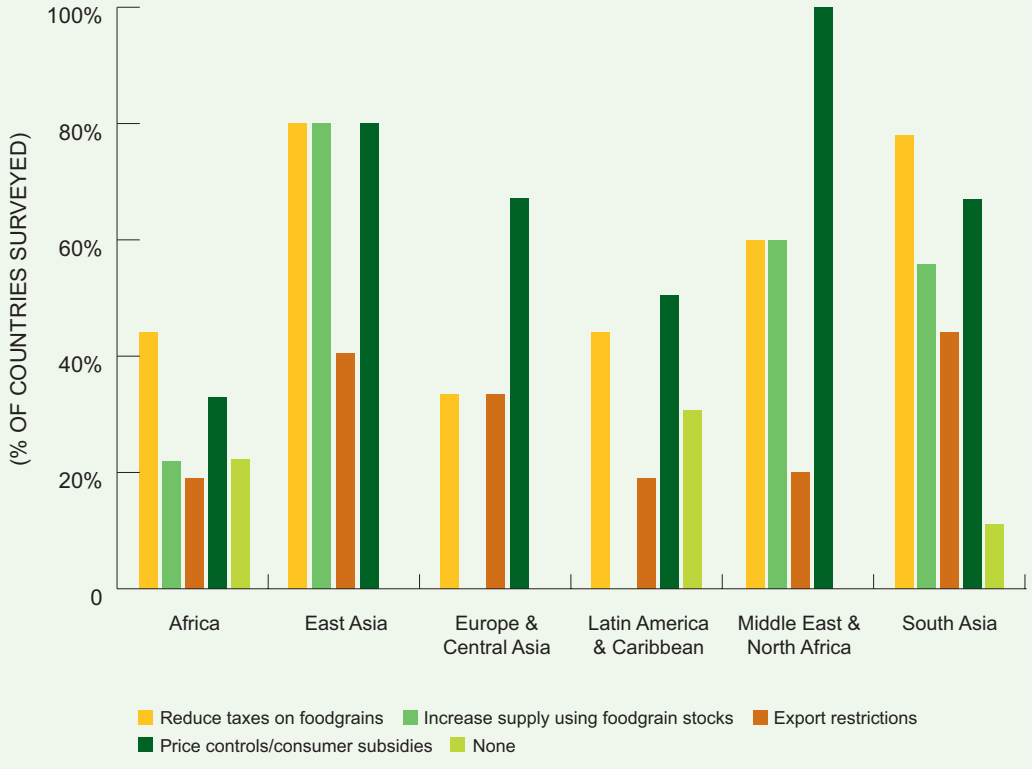
Among 60 low-income countries surveyed by the FAO in 2008, around one-quarter had some form of export restriction in place on food-related agricultural products. Figure 1 below presents the responses of 77 countries to the recent increase in prices, grouped by geographical region. It is interesting to see that East Asia and South Asia led in terms of export restrictions, with around 40 percent of the countries surveyed implementing these measures, but Europe and Central Asia were not far behind at close to 35 percent. Africa, Latin America and Caribbean, the Middle East and North Africa exhibited more or less similar values of close to 20 percent.

India, Vietnam, China and 11 other countries have limited or banned rice exports. India banned non-Basmati rice exports in November 2007 and Basmati rice exports in April 2008, then allowed exports of top grade aromatic rice from mid-October 2008, but at a minimum price of $1200/ton.

In the case of wheat, fifteen countries, including Pakistan and Bolivia, also have capped or halted wheat exports. Russia (not yet a WTO member) stopped shipments of wheat in order to ensure adequate domestic supplies. Kazakhstan also suspended wheat exports in April 2007, but then opened them again in summer 2008. Joe Glauber, Chief Economist at the USDA, estimates that the wheat price increased by 20 percent as a result of the export restrictions (*Economist*, March 27, 2008). Soybean markets were also disrupted. Argentina banned soy exports, to go along with a series of export taxes that had been set in place the year before. Kazakhstan also banned soybean and sunflower seed exports. More than a dozen countries have limited corn exports. Details about recent export restrictions and their effects are discussed in Table 1.

Joe Glauber, Chief Economist at the USDA, estimates that the wheat price increased by 20 percent as a result of the export restrictions (*Economist*, March 27, 2008).

Figure 1: Popularity of Measures Used in the Face of Rising Food Prices



Source: FAO (2008) Soaring food prices: facts, perspectives, impacts and actions required. HLC/08/INF/1

Table 1: Recent Export Restrictions Imposed by Countries — Some Examples

AGRICULTURAL PRODUCT	COUNTRY IMPOSING RESTRICTION	DETAILS ABOUT RESTRICTION	DURATION	TRADE AFFECTED	EFFECTS
Rice	India	Ban on non-basmati rice	Nov. 2007 onwards	Indian exports dropped from 5.5 million metric tons in 2006 to 4.1 million metric tons and 2 million metric tons (projected) in 2007 and 2008 respectively.* Correspondingly, world trade in rice has gone down from 31.3 million metric tons in 2006 to 30.3 and 28.2 (projected) million metric tons in 2007 and 2008 respectively. The ban on non-basmati rice exports is expected to continue till October 2009 when India goes to the polls. Some government-to-government sales to African countries and Bangladesh are taking place.	The Philippines, the world's largest importer of rice, imported a consignment at more than $700 per ton in April 2008 and in excess of $ 1100 per ton in May 2008 (Brahmbhatt, et al, 2008); compare this to the average of $332.4 per ton prevailing in the international market in 2007. Food riots have been reported in different parts of the globe such as Bangladesh and the Philippines (Chaube, 2008)
	Vietnam	Tightening of export restrictions	March 2008	Has not had a significant effect on Vietnam's annual exports	
Wheat	India	Export ban	2007 and 2008	Wheat exports from India reached a high of 5.65 million metric tons in 2003 and then declined at an even pace to 0.2 million metric tons in 2006. In 2007 and 2008 wheat exports have been almost non-existent.	From 2005 to 2008 world wheat production went up from 620 million metric tons to 676 million metric tons (projected). At the same time exports went up from 117 million metric tons to 123 million metric tons (projected). Thus, there has been a decline in trade as a proportion of production by around 0.9 percentage points. During the same time period, world population has gone up by 3.5 percent and use of wheat for feed consumption has gone up enormously (from 111.4 million metric tons to a projected figure of 124.4 million metric tons), probably due to the rising demand for meat. Export restrictions, population growth and the sudden rise in the demand for wheat as feed have together produced a massive price rise. Global wheat prices rose by 83 percent at the outset of 2008 compared to 2007 prices (Global Market Brief, Stratfor, 2008)
	Argentina	Quantitative restrictions on wheat exports amounting to an *ad valorem* export tax of 32.5 percent in mid 2007 (Nogues, 2008)	2006 onwards	Wheat exports over the last 3 years (2006-08) have averaged 9.3 million metric tons per annum as opposed to an average of 10.2 million metric tons for the period 2002-05 while average annual production was only 0.5 million metric tons greater in the earlier period.	
	Kazakhstan	Ban	April 2008	Total annual wheat exports from Kazakhstan have been hit badly and are projected to be around 1.6 million metric tons lower this year than compared with the previous year. In normal times Kazakhstan controls around 8 percent of the world export market for wheat according to USDA data.†	

* The website http://worldfood.apionet.or.jp/index-e.html has been used for all food grain statistics.

† http://www.nationmaster.com/graph/agr_gra_whe_exp-agriculture-grains-wheat-exports_percap

Table 1: Recent Export Restrictions Imposed by Countries — Some Examples *(continued)*

AGRICULTURAL PRODUCT	COUNTRY IMPOSING RESTRICTION	DETAILS ABOUT RESTRICTION	DURATION	TRADE AFFECTED	EFFECTS
Raw cashmere and leather products	Mongolia	Ban	Has been in place for quite some time	Mongolia accounts for 10-25 percent of raw cashmere production (Takacs, 1994); it is a small country of only 3 million or 0.05 percent of world population. Lifting of the export ban would result in a huge inflow of raw cashmere into the world market.	The world price of cashmere has most probably been pushed upward by the export ban because of the importance of Mongolia as a cashmere producer. Mongolia would surely have had a large exportable surplus of raw cashmere had the ban not been in place.
Processed Beef	Argentina	Quantitative restriction amounting to 33 percent *ad valorem* export tax (Nogues, 2008)	2007 and 2008	Argentina is one of the world's largest producers of beef (over 3 million metric tons per year), and produces around 5 percent of the world's total beef production with just around 1.5 percent of its population. Historically, it has been a significant exporter of beef to the U.S.	World prices for beef seem to have risen sharply; for instance between December 2007 and February 2008, world price of beef went up from $5000 per ton to $8000 per ton (FWI, 1st February, 2008). These export restrictions seem to have been undertaken to protect the Argentine beef consumer from global price rise. Such protection assumes great economic and political significance, given that the per capita consumption of beef in Argentina is the highest in the world.

This slew of export restrictions occurred at a time when stocks were at historically low levels. As the World Bank points out, in the 1970s and 1980s many countries implemented a grain buffer stock policy to physically carry over grain surpluses (domestic or imported) from low price years to high price years. In practice, this policy tended to entail high fiscal costs with difficult management and governance issues, while the benefits it yielded for household food security were unclear. Furthermore, countries began to rely on world markets to provide a steady supply of relatively cheap grain imports when needed. More recently, however, the stock-holding policies of several large producers — such as the U.S., EU and China — have changed, contributing to the present situation of very low global grain stocks and increased global price volatility. As a consequence, a number of developing countries, such as Indonesia, are considering reverting to a form of reserves management, particularly after experiencing the impact of export bans in key export countries.

This slew of export restrictions occurred at a time when stocks were at historically low levels.

3. The Domestic Impact of Export Restrictions

In this section we look at the impact of export restrictions on the market of the economy that imposes them. Change in economic welfare in this case is defined as the sum of changes in producer surplus (revenues), consumer surplus and government revenues produced by the ban.

3.1 Export Bans/Embargoes

Countries ban exports of a commodity in order to ensure greater availability in their domestic markets at lower prices. Recent examples are Indian bans on non-basmati and then basmati rice exports and the embargo placed on wheat exports by Kazakhstan. The ostensible reason for such bans is food security, but as mentioned above, this might mask political motives. Low food prices might be an effective way to win political support.

We present here an overview of the domestic economic impact of export bans in the country imposing such bans; Appendix I(A) presents a more thorough examination. Export bans are undertaken as an effort to redistribute welfare to the consumer. Yet, in the absence of market failure, such market interventions result in an aggregate welfare loss. The greater the market intervention, the greater the welfare loss. An export ban increases the availability of the product to domestic consumers, and domestic prices decrease to absorb this increased availability, leading to a price distortion. The exact price distortion will depend on the price elasticity of the product: if consumer demand is responsive to price changes, a smaller price decrease is required to absorb excess availability. Export bans therefore result in greater welfare loss when they are imposed on inelastic staple goods such as grains, as they require a greater price decrease to absorb the increase in domestic supply.

In the long run, the welfare change also depends on the responsiveness of supply to price. Prices tend to fall as a result of the reduction in total demand caused by an export ban. Prices stabilize when supply contracts and demand increases. If supply is responsive to price decreases, a smaller adjustment is required on the demand side. This translates into a lower quantity distortion and therefore a smaller welfare loss. Similarly, price distortion would also be lower here because a greater price responsiveness of supply implies less excess supply on the domestic market and therefore a lower price decrease needed to return to equilibrium.

3.2 Export Taxes

Taxes on exported products can be set on a specific or an *ad valorem* basis. Many countries employ export taxes, and such policies can constitute a substantial source of government revenue. Indonesia applies taxes on palm oil exports; Madagascar on vanilla, coffee, pepper and cloves. Brazil imposed a 40% export tax on

sugar in 1996. In December 1995, the EU imposed an export tax on wheat of $32 per ton (Suranovic, 2008). The U.S. Constitution prohibits the use of export taxes, as a result of demands by Southern cotton producers who exported much of their product to England and France.

Appendix I(B) outlines the economic impacts of export taxes on the domestic economy in greater detail. Similar to an export ban, an export tax is imposed purely for distributional considerations — to ensure adequate welfare for domestic consumers in the face of high international prices. In the absence of market failure, however, such redistribution also results in a reduction in aggregate welfare. The extent of the welfare loss depends on the price and quantity distortions. The level of the price distortion is equal to the magnitude of the export tax. The quantity distortion — namely the increase in domestic quantity consumed (and therefore reduction in quantity exported) will depend on how responsive demand is to price reductions. Greater demand responsiveness creates a greater quantity distortion, and thus leads to greater welfare loss. Unlike export bans, export taxes thus result in greater welfare losses when they are applied to non-staples than staples.

In the long run, domestic producers will decrease their supply in response to the lower price. Greater supply responsiveness leads to a greater reduction in exports and consequently, a greater loss to the economy. Revenues from an export tax help to neutralize the losses arising from its imposition, but this counter-effect becomes weaker as the magnitude of export loss increases.

3.21 Differential Export Taxes

A more sophisticated version of an export tax is a differential export tax (DET). Under this policy, the export tax is much lower on the processed agricultural product than on the underlying raw material. For example, Argentina applies DETs on wheat and products processed from wheat; it taxes wheat at much higher rates than wheat flour. This has two effects: first, the export taxes on the processed product and the input decrease domestic prices of both in equilibrium. Second, both the domestic consumption of wheat flour as well as the use of wheat in processing for the production of wheat flour increase. However, the price of wheat is decreased more than that of wheat flour, thereby increasing the profitability of wheat flour production. This is in effect a subsidy to the wheat flour industry without any burden on the government. This subsidy has made the Argentinean wheat flour industry extremely competitive and prompted Chilean growers and millers to seek safeguard measures (Hennicke, 2006).

A more sophisticated version of an export tax is a differential export tax (DET). Under this policy, the export tax is much lower on the processed agricultural product than on the underlying raw material.

3.3 Export Quotas/Licenses

When export quotas or licenses are imposed, a ceiling is placed on the amount of allowable exports. Licenses are given out, with total capacity licensed equal to the size of the quota. However, if prices in the international market are not favorable, the quotas may not be binding. Examples of export licenses/quotas include those imposed in Mongolia for cashmere wool and in Romania for wooden products in the 1990s (see Takacs, 1994).

Appendix I(C) delineates in greater detail the welfare impact of export quotas/licenses on the domestic economy. In essence, a binding export quota should have the same welfare impacts as an export ban, since both are quantitative restrictions on imports, the latter more stringent than the former. Similar to export bans, welfare losses under export quotas are greater for staple goods like grains than for non-staple goods that show greater demand responsiveness to price changes. Similarly, greater supply responsiveness in the long run will result in less excess supply on the domestic market and reduce the welfare loss to the overall economy.

3.4 Restrictions by State Trading Enterprises

Restrictions by State Trading Enterprises (STEs) operate in a wide range of agricultural commodities but have been employed the most in global grain and dairy trade. For instance, there are prominent STEs in wheat exporting and importing countries. From 1994 to 1997, 33 percent of national wheat exports were handled by the Australian and Canadian Wheat Boards, two STEs. The United States and the EU, also prominent wheat exporters, both employ STEs. In Kazakhstan, the State Food Contract Corporation, an STE, handles 10 percent of that country's exports (USDA, 1998).

Restrictions by State Trading Enterprises (STEs) operate in a wide range of agricultural commodities but have been employed the most in global grain and dairy trade.

STEs often have export or import monopolies in one or more products. These monopolies can be used to manipulate the amount of export or import of products so as to influence domestic supply, demand and prices. Food security and price stability are two considerations that influence the working of STEs (see Miner, 2000). STEs constitute a valve that can be closed to shut off exports if international prices of a product (and therefore domestic prices) are too high and opened to resume exports when prices are much lower. STEs provide an easier method of regulating exports than other measures, such as export taxes, do.

3.5 Summarizing the Domestic Impact of Export Restrictions

Export quotas lead to relatively less welfare loss for the exporting country than export embargos, but these differences diminish as the export quotas tend to zero. However, the magnitude of welfare losses from different types of restrictions is determined by the receptivity of demand and supply to changes in price, as illustrated in the table below.

Table 3 shows that export taxes produce more serious welfare losses when applied to non-staples (fruits, timber, etc.) characterized by high responsiveness of demand to price. On the other hand, export quotas/bans produce bigger welfare losses in the case of staples (i.e. grains) characterized by inelastic demand. This is because an export quota/ban determines the decline in exports and the resulting increase in domestic consumption; a given rise in domestic consumption is accompanied by a greater fall in price (price distortion) in the case of staples with inelastic demand than for other commodities.

Conversely, an export tax stipulates the fall in the level of the domestic price — this fall in domestic price is accompanied by a greater increase in quantity demanded (quantity distortion) in the domestic market in the case of elastic, non-staple goods. Unlike exports, domestic sales do not provide any tax revenues to the government to neutralize the loss to the producer from price decreases.

Table 2: Factors that Influence Welfare Loss of the Exporting Country as a Result of Export Restrictions

Type of Export Restriction	Time Horizon	Impact on the Magnitude of Welfare Losses of Factors Listed Below	
		SUPPLY RECEPTIVITY TO PRICE	DEMAND RECEPTIVITY TO PRICE
BAN	SR	0	–
	LR	–	–
TAX	SR	0	+
	LR	+	+
QUOTA	SR	0	–
	LR	–	–

NOTE: "+" implies that a higher value of the factor increases the magnitude of the welfare loss; "–" implies that a higher value of the factor leads to a decline in the mentioned magnitude; "0" implies no change at all.

4. Global Impact of Export Restrictions

Having considered the domestic impact of several types of export restrictions, we now turn to their global impact. Again, a detailed explanation is provided in Appendix II.

As stated, any export restriction is a distortion that, in the absence of market failure, will cause aggregate economic welfare loss in the rest of the world. Export restrictions imposed by a country will reduce supply to the rest of the world. As a result, international prices will increase, and consumer welfare will decline. However, increased prices will benefit producers in the rest of the world and increase their profits in the short run. But since this is after all a distortion, the decline in consumer welfare will always be greater than the increase in producer welfare. The net economic welfare loss from the price change will be a function of demand and supply characteristics, which need to be determined empirically.

Export restrictions imposed by a country will reduce supply to the rest of the world. As a result, international prices will increase, and consumer welfare will decline.

In the long run, producers in the rest of the world will increase their supply in response to higher prices. As a result of increased supply, the price adjusts downward from the short-run level, but still remains above the pre-restriction level. Given the distortion introduced by export restrictions, the net welfare change in the long run is negative.

5. Estimating Change in World Welfare Due to Export Restrictions: Methodology and Results

As stated above, the magnitude of the welfare loss caused by export restrictions in the short run is a function of demand and supply characteristics. In Appendix III, we describe the econometric methodology for estimating the short-run demand and supply characteristics and then apply it to two scenarios: a) no export restriction on rice by India in 2008 and b) export restriction on rice by India in 2008. Results are provided in Table 3.

Table 3: Price and Quantity Consumed Under Different Scenarios

Scenario	Region	Variable	Projected 2008 Level	Actual 2006 Level
No Export Ban	World	QUANTITY CONSUMED (MILLION METRIC TONS)	442.2	411.6
		PRICE (IN 2005 $)	433.7	295.43
	ROW	QUANTITY CONSUMED (MILLION METRIC TONS)	359.05	326.52
		PRICE (IN 2005 $)	433.7	295.43
	India	QUANTITY CONSUMED (MILLION METRIC TONS)	94.45	85.1
		PRICE (IN 2005 $)	433.7	295.43
Export Ban	India	QUANTITY CONSUMED (MILLION METRIC TONS)	101.86	85.1
		PRICE (IN 2005 $)	-542.164*	280.37
	ROW	QUANTITY CONSUMED (MILLION METRIC TONS)	344.32	326.52
		PRICE (IN 2005 $)	1300.71	295.43

** Note that the projected post-ban price for India in 2008 turns out to be a significant negative amount. This is simply a fallout of our assumptions of linearity in the demand curve and that the entire amount produced in India goes to the domestic market. In reality, much of the production prevented from going to the export market might find its way to buffer stocks.*

Price increases caused by export restrictions have the greatest impact on the world's poorest consumers and pose a serious threat to their food security. As such, export restrictions on staples have contributed to unrest in different parts of the world threatened by food insecurity.

The findings are that prices facing the rest of the world (ROW) increase significantly as a result of the export restriction — from $433.7 per ton to $1300.71 per ton. Consumer welfare thus declines, but producer profits increase. The net decline in economic welfare is calculated to be $6.38 billion — 0.2 percent of the Indian GDP and 0.01 percent of the world GDP.

More important than the net economic welfare loss, however, is the large decline in consumer welfare; this is in fact what makes export restrictions so detrimental. Price increases caused by export restrictions have the greatest impact on the world's poorest consumers and pose a serious threat to their food security. As such, export restrictions on staples have contributed to unrest in different parts of the world threatened by food insecurity.

SECTION II: TRADE DISCIPLINES FOR EXPORT RESTRICTIONS

We now turn from an analysis of the welfare losses caused by export restrictions to an examination of how they have been addressed in international trade rules and other trade agreements. Section II presents an evolution of the treatment of export restrictions from the GATT to the Uruguay Round and the ongoing Doha Development Agenda and examines the effectiveness of these GATT/WTO provisions to curb export restrictions. A special discussion on the related issue of food aid is included. Examples of how export restrictions have been handled at the bilateral and regional level are also given. Section II also includes a discussion of intergovernmental commodity agreements, which have been created with the aim of promoting market stability and are seen as instruments that might obviate the need for export restrictions. Section II ends with a list of options to pursue to address export restrictions in future trade agreements.

1. GATT Disciplines on Export Restrictions and Taxes

Quantitative restrictions on exports, including agricultural goods, are banned in the GATT, but exceptions in the agreement make the rules difficult to interpret and enforce. There are no prohibitions on export taxes; Article XI of the GATT (94) states in paragraph 1 that there shall be "no prohibitions or restrictions other than duties, taxes or other charges...on the exportation...of any product" destined for another WTO member. However, paragraph 2(a) makes an exception for quantitative restrictions "temporarily applied to prevent or relieve critical shortages of foodstuffs or other products essential to the exporting contracting party." It has been relatively easy, therefore, for countries to justify export restrictions as a means of relieving critical food shortages. No definitions exist as to what is "temporary," "critical" or what constitutes a "shortage." There has yet to be any successful challenge to the export restrictions implemented by an exporter of a foodstuff.[2] Additionally, as export taxes are not disciplined, one would imagine that a prohibitive export tax could substitute for a ban if needed.

A further basis for imposing export restraints is found in Article XX, the "general exceptions" provision. Paragraph (h) allows an exemption (from other disciplines in the GATT) "undertaken in pursuance of obligations under any intergovernmental commodity agreement which conforms to the accepted conditions of such agreements."[3] Paragraph (i) allows an exemption if the product in question is a (raw) material used in domestic processing and the domestic price "is held below the world price as part of a governmental stabilization plan." Even more generally, Paragraph (j) allows restrictions that are "essential to the acquisition or distribution of products in general or local short supply." Though aimed at non-agricultural raw materials, it would seem likely that this article could provide an argument that restrictions on food exports are allowed under the general exceptions rule.

The flexibility of Article XI of the GATT on the use of export restrictions was demonstrated during the high-price period of the 1970s. At that time, there were widespread quantitative restrictions placed on exports of agricultural products. Although circumstances were different at that time, the reaction of governments to the price spike of 1972-74 bears examination in the light of recent events. This experience paved the way for later attempts at disciplining export restrictions.

The event that drove the market for grains in the early 1970s was the failure of the 1972 USSR crop. Production of wheat dipped by about 13 million metric tons, and inadequate reserves forced the Soviet Union to go somewhat reluctantly into the international market.[4] In what became known as "the great grain robbery," the

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[2] There have been disputes over export restrictions on non-agricultural products. An interesting case that is under discussion at present relates to the alleged restrictions on steel and other industrial products by China.

[3] The footnote to Article XX refers to the conditions agreed in the UN Economic and Social Council in 1947. This mandates representation by both exporters and importers.

[4] The previous Soviet purchase of wheat from the U.S. had been in 1965/66. Production fluctuations were more commonly reflected in consumption shifts, including the reduction of the livestock herd when feed supplies were tight.

Soviets bought 13.7 million metric tons of wheat and coarse grains.[5] In effect, 18 million metric tons of wheat were released from stocks to make up the production shortfall and provide for modest consumption increases (Josling, 1981). The sharply lower stock levels in turn caused countries to anticipate their import needs; grain prices reacted strongly in 1972 and remained high for two years.

The situation in the oilseed market was sparked by a different event: the decline of anchovy catch in Peru (due to an El Nino climate pattern) reduced fishmeal production and raised the demand for soybeans. In addition to the grain purchase, the Soviets bought 900 thousand metric tons of soybeans at a time when supplies were tight.

What made the USSR purchase the more significant was the parlous situation in other countries. Global food production declined 3 percent in 1972, at a time when demand was rising. The simultaneous rise in oil prices made the situation even worse: crude oil rose from $4 a barrel to $7.50 a barrel in October 1973.[6] The impact on fertilizer prices was dramatic, doubling the price of nitrogen. The emerging "green revolution" seemed threatened (USDA, 1986).

The policy reactions of the major economies were to try to avoid the contagion of high food prices by price controls, import subsidies and export restrictions. In the U.S., the price of soybeans was particularly sensitive, as it had a knock-on impact on poultry and processed food prices. President Nixon banned all oilseed exports for a brief period in 1973. The fact that the general ban was of short duration (4 days) moderated the impact on the market. A more targeted "moratorium" on grain exports was introduced in 1974, aimed at the USSR as the most volatile importer; this was repeated in 1975 amid fears that another major grain purchase by the USSR would further boost inflation. This led to the conclusion of a long-term agreement between the U.S. and the USSR (and Poland), under which the USSR would purchase at least 7 million metric tons of grain a year (and Poland, 2.5 million metric tons) and notify the U.S. if harvest failures might require an increase in such imports. In 1975 a bilateral agreement between Japan and the U.S. (the Butz-Abe agreement) was also concluded to give some assurance to Japan of continued access to supplies of at least 3 million metric tons of soybeans from the U.S.

The high price period reminded Japan of its vulnerability to trade embargoes. It prompted the Japanese to invest more heavily in Brazil's soybean industry. Brazil, however, was not seen as a reliable supplier at that time, alternating between promoting and restricting exports. The macroeconomic instability of the time meant that the cruzeiro exchange rate was often the determinant of Brazil's competitiveness. At the same time, the EC started supporting oilseed production (rapeseed and soybeans) at home and importing from Brazil. It instituted export taxes on grains, which were selling domestically at a lower price than could be had on the world market. Argentina entered the export market at that time, and aided by pro-market policies, expanded its exports of soybeans. Argentina. Brazil, the EC, Thailand and Burma all restricted exports of grains during the turmoil of the early 1970s.

Export embargoes were also used as a cold war weapon. The most dramatic export embargo occurred in 1980, when the U.S. chose to show its disapproval of the Soviet invasion of Afghanistan by halting grain shipments. This political motivation differentiated the 1980 embargo from the export restrictions of the 1970s. The reaction to the 1980 embargo was also different; Argentina expanded its sales to the USSR, and other exporters — though pledging solidarity with the U.S. — also saw their exports increase. The embargo's relative lack of impact on Soviet policy, coupled with the negative reaction of farm groups in the States, removed considerable luster from this policy instrument.

The GATT was unable to anticipate and react to these export policies. The dividing lines between countries on how to establish an appropriate framework for controlling such exporter behavior had been hardening since the 1950s. At that time, several contracting parties wanted to reinstate parts of Chapter VI of the Havana Charter, which dealt with international commodity agreements, but which had not become part of the GATT.

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[5] The "larceny" consisted of buying from five different grain companies at the same time, so that the market was unable to adjust quickly. The U.S. government aided the sale by means of credits and subsidies.

[6] A second price rise in 1979 took the oil price to $32 a barrel.

The 1958 Harberler report supported the idea of international commodity agreements. Committee II, which followed up the Harberler Report's ideas for agriculture, laid out the framework for such agreements. In the 1960s, the European Community was the main supporter of commodity agreements: the Common Agricultural Policy would be easier to manage with international agreement on price floors and ceilings. The U.S. reluctantly agreed to discuss such arrangements. The Kennedy Round produced one such agreement, the International Grains Arrangement (IGA) of 1968, but this did not prevent the price surge in the 1970s or the export curbs that accompanied the high prices. A similar agreement discussed in the Tokyo Round was even less successful and never had any market impact. Discussion of commodity agreements migrated largely to the United Nations Conference on Trade and Development (UNCTAD), which developed an Integrated Programme for Commodities in 1972; it did not, however, encompass such key commodities as wheat, corn, rice and soybeans.

2. The Uruguay Round Agreement on Agriculture

When the agenda for the Uruguay Round was being formulated, the high agricultural prices of the 1970s were a distant memory. Nonetheless, there was a new attempt at refining the conditions laid down under GATT Article XI for export restrictions. The Agreement on Agriculture (URAA) elaborates on the matter of disciplines on export prohibitions and restrictions: Article 12 stipulates that when a member institutes *new* export restrictions (emphasis added) "in accordance with paragraph 2(a) of Article XI of GATT 1994," the member shall observe the following provisions:

- "give due consideration to the effects of such prohibition or restriction on importing Members' food security;
- give notice in writing, as far in advance as practicable, to the Committee on Agriculture comprising such information as the nature and the duration of such measure; and
- consult, upon request, with any other Member having a substantial interest as an importer with respect to any matter related to the measure in question."

However, these obligations are relaxed for food importing developing countries: they do not apply "to any developing country Member, unless the measure is taken by a developing country Member which is a net-food exporter of the specific foodstuff concerned." The effect of Article 12 is to allow a continuation of export bans and taxes without effective limits.[7] While Article 12 requires members to notify the WTO when they restrict food exports, there are no penalties for ignoring the rule.

The URAA's more explicit rules on export restrictions did not prove more effective in curbing export restrictions during the recent period of high prices than the prior set of rules was during the 1970s. As delineated in Section I, countries moved rapidly to implement export restrictions; perhaps most acutely in the rice market.

The reputation of exporters has taken a further hit, and according to the WTO, not one of the countries that imposed restrictions in the past year complied with the requirement to notify under Article 12 of the URAA.

[7] There is a recognized category of countries that are "net food importing developing countries" based on self-designation but subject to verification. No such category exists for net food exporting developing countries.

3. The Doha Development Agenda

The question of export restrictions and export taxation has been raised somewhat spasmodically in the Doha Round. In the early stages of the agricultural talks that began in March 2000 in Geneva, as mandated by the URAA, export taxes and restrictions were clearly on the table (Tangermann and Josling, 2001). A number of importing countries, particularly Japan and Korea, were concerned that their food supplies could be disrupted if exporting countries restrict or tax exports. Switzerland favored eliminating taxes and restrictions completely, but with some flexibility for developing countries. The Cairns Group of net exporters were ambivalent: their concern was more with differential export taxes — the imposition of higher export taxes on raw material exports by countries wishing to favor their own processing This issue became linked to "tariff escalation" — i.e. higher duties on processed products than on raw materials, which hamper the development of value added processing industries in countries that produce raw materials.

The question of export restrictions and export taxation has been raised somewhat spasmodically in the Doha Round.

Several countries mentioned export restrictions in the papers that they submitted in Phase 1 of the Agricultural Negotiations, before the Doha Round was started. The U.S. included in its comprehensive proposal (G/AG/NG/W/15) the objectives:

- "to strengthen substantially WTO disciplines on export restrictions to increase the reliability of global food supply.
- to prohibit the use of export taxes, including differential export taxes, for competitive advantage or supply management purposes."

It is not quite clear in the U.S. proposal whether the substantial strengthening of the disciplines would entail a prohibition of quantitative export restrictions or whether taxes for "supply management" would include their use to keep domestic prices low.

Among the other exporters, the Cairns Group (CG) also made suggestions on export restrictions. The CG noted in its proposal (G/AG/NG/W/93) that food security is of concern to many Members, but especially to least developed and net food-importing developing country Members. As exporters, the CG feared that restrictions or taxes used to limit exports of agricultural products would raise concerns about the wisdom of relying on the international marketplace to meet essential food and feed requirements. As a consequence, it suggested tighter disciplines on export restrictions and taxes that would "contribute to assuring Members about their ability to access food and feedstuffs in world markets." The CG proposed that the agriculture negotiations should:

- develop both improved disciplines on export restrictions and taxes and eliminate tariff escalation; and
- preserve Article 12.2 of the Agreement on Agriculture and provide additional special and differential treatment provisions to address the legitimate needs of developing countries, including least developed and net food-importing developing countries.

The importers took a more ambitious line. The issue was not the loss of faith in the trade system but the impact on food security. Japan's more detailed suggestions (G/AG/NG/W/91) included proposals:

- to tariffy all export prohibitions and restrictions (by replacing them with export taxes);
- to bind all export taxes (including those possibly introduced in the future). For products subject to the export tax, to establish quotas in which a certain amount of exports will be exempt from the export tax;

- in the case where temporary and short-term measures to restrict exports become necessary, before export taxes are introduced, to clarify the disciplines applied on such emergency measures used in order to adjust the volume of exports. Measures for clarifying such disciplines are:

  (i) To establish strict requirements for the application of such emergency measures;

  (ii) To introduce consultations with other Members as a prerequisite for imposing emergency measures, and to clarify the measures to be taken when the consultations do not result in a satisfactory solution;

  (iii) To obligate Members, when introducing emergency measures, to maintain the proportion of exports to domestic production at the level of the preceding x years, in order to allow importing countries to secure the necessary level of imports;

  (iv) To limit the duration of such emergency measures.

Korea went further by arguing for a ban on prohibitions and export taxes (G/AG/NG/W/98), proposing:

- to prohibit exporting countries from imposing export restrictions and prohibitions arbitrarily;
- to prohibit the use of export tax for the purpose of export restriction.

Switzerland supported this approach, proposing (G/AG/NG/W/94):

- the elimination of all export restrictions on agricultural products and the binding at zero of all export tariffs (with a flexibility clause for the LDCs).[8]

These suggestions appeared to place the question of export restrictions squarely in the agenda for the agricultural talks mandated by the URAA. However, when the agricultural talks were subsumed in the Doha Round in November 2001, the topic seemed to get lost. There were relatively few references to the issue as countries began to formulate their own preferred agenda items. Two "non-papers" were tabled by the U.S. and Japan during this phase of the talks. By the Cancún ministerial in September 2003, the issue had virtually disappeared from sight, though both the Castillo and the Derbez drafts (of the text intended to be agreed at Cancún) proposed that the subject eventually be negotiated.[9] In the July 2004 framework agreement, the issue was again left to future discussion: the framework simply says disciplines are to be strengthened, with the details left to be negotiated.

The issue of export restrictions did play a part in the non-agricultural part of the Doha agenda. As an aspect of Non-Agricultural Market Access (NAMA), countries began to discuss non-tariff barriers (NTBs). While a somewhat imperfect fit, Members such as Japan and the EU attempted to introduce into these discussions the notion of preventing or restricting the use of export taxes and export restrictions for non-agricultural goods. A proposal of April 30, 2006, suggested a new agreement on the topic as a part of the Doha agenda. The U.S. apparently supported the initiative. But strong opposition from Argentina, Brazil, Malaysia, Venezuela and Indonesia, who argued that the topic was not on the Doha agenda, slowed the progress.

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[8] Two other countries addressed the issue specifically in this first phase: the Democratic Republic of the Congo proposed (G/AG/NG/W/135) the abolition of export taxes and the Hashemite Kingdom of Jordan proposed (G/AG/NG/W/140) the prohibition of all export restrictions on agricultural products. The EU was noticeably silent on the subject.

[9] The question of differential export taxes did stay on the agenda for some time: this topic remains in the latest version of draft modalities (though merely as a heading in squared brackets) released in July 2008.

The food crisis of 2006-08 revived the issue in the context of the agricultural negotiations, particularly when significant exporters began to limit international sales (see Section I). The need to address the issue of export bans and taxes was pushed once more by Japan and Switzerland. In an informal paper in April 2008, they proposed constraining countries' ability to restrict food exports and requiring them to consider how such policies affect countries that depend on food imports. Specifically, they called for a Doha Round agreement to require "any new export prohibition or restriction [to] be limited to the extent strictly necessary" for the country imposing it, in light of production, stocks, and domestic consumption. The proposed rules would oblige countries seeking to restrict exports to give "due consideration" to importers' food security, and look at how trade would have flowed in the absence of restrictions. They would also have to show how food aid for net food-importing developing countries would be affected. Countries would be required to notify the WTO Committee on Agriculture before instituting export restrictions, explaining the nature, duration, and reasons for the measures. Furthermore, governments would be required to consult with importers about "any matter related to the proposed" export restriction, with the implementation of the planned measure stayed pending the consultations. If the differences could not be resolved within a certain period of time, the proposed export restriction would be referred to binding arbitration by a "standing committee of experts."

The new proposal by Japan and Switzerland would have gone well beyond the rules on export restrictions outlined in the draft negotiating text currently under consideration in the agriculture negotiating committee (WTO, 2008). Based on a proposal from the G-20 group of developing countries, the latest version of the draft DDA modalities text would require the WTO to be notified within 90 days after — not before — the imposition of export restrictions. It calls for export restrictions to normally last no longer than one year, with importers' consent required for measures that last longer than 18 months — a period that Japan and Switzerland found too long. The modalities also include an exemption from these requirements for least-developed and net food-importing countries.[10]

Food aid would appear to help to alleviate the problem of high prices for impoverished importing countries and thus defuse some of the negative effects of embargoes. However, since appropriations are often made in monetary terms, the quantity of aid drops when prices increase.

At the broader political level, the food price surge posed a challenge for the negotiators. Perhaps if high prices were to be the norm in the future, then cutting tariffs would occur as a result of individual importer's policy decisions, domestic support restrictions would be unnecessary, and export subsidies would be a thing of the past. But the opportunity was missed to make a strong political link between the strengthening of disciplines on export restrictions in the WTO and the food price issue, presumably because of the opposition from countries that were in fact employing export restrictions.

4. Food Aid

Connected to the issue of export restrictions are the rules related to food aid and to financing food imports. Export restrictions themselves have an impact on food aid, as witnessed recently. Food aid would appear to help to alleviate the problem of high prices for impoverished importing countries and thus defuse some of the negative effects of embargoes. However, since appropriations are often made in monetary terms, the quantity of aid drops when prices increase. Hoarding due to increased perception of food shortages has also hindered food aid procurement by international relief groups, such as the World Food Program (WFP). Josette Sheeran, the WFP's Executive Director, admitted that the WFP agency is "having trouble buying the stocks we need for emergency operations." Press reports have indicated that restrictions have "delayed efforts to increase feeding programs in Somalia and Afghanistan. The food aid program had long purchased grain from Pakistani traders or national stocks. When Pakistan imposed a ban on most wheat exports this spring, the food program was forced to find a new supplier, creating months-long delays" (Bradsher and Martin, 2008a).

[10] Revised Draft Modalities for Agriculture TN/AG/w/4/Rev.4; pars.171-180

Food aid rules are being revised in the Doha Round within the context of the negotiations on export competition. The draft text (which has few squared brackets and hence is likely to survive if there is an agreement) aims to maintain adequate levels of food aid, subject to disciplines. Aid should be "needs-driven," be given in grant form, not be tied to commercial exports or linked to market development objectives of the donor, and not be re-exported. In addition, aid should avoid commercial displacement, take into account local conditions, procure from local sources where possible and be moved where possible to "cash-based" food aid. None of this is specifically aimed at making sure that adequate levels of food aid are available when needed. Even the creation of a "safe box" for emergency food aid, tied to a declaration of emergency and an assessment of need by a relevant agency, does not seem to address the impact on the poor of high prices for basic foods. Non-emergency food aid, based on needs assessment and linked to nutritional requirements of food-insecure groups, comes closer. However, the WTO still addresses food aid in the context of preventing behind-the-back export subsidies rather than shoring up a reliable approach to the impact of high prices on poor countries and families.

[T]he WTO still addresses food aid in the context of preventing behind-the-back export subsidies rather than shoring up a reliable approach to the impact of high prices on poor countries and families.

Financial devices to offset the impact on countries and households that are hardest hit by price surges are another alternative that has been tried. The IMF Compensatory Financing Facility (CFF) of 1963 and the cereal import facility that was added to it in 1981 have had limited success. An Exogenous Shocks Facility was added by the IMF in 2005, though it is not yet clear how this has helped in the price rise that started in 2006. Although import financing has not been the province of the WTO, the Uruguay Round Ministerial Decision on the impact of the URAA on food deficit developing countries envisages the need for such facilities. In 2001, several developing countries proposed a Food Import Financing Facility (FIFF) that would give substance to the intentions of the Decision. The FIFF was based on the concept of a revolving fund, and gained the institutional support of the FAO and UNCTAD. But potential contributors to the fund were less enthusiastic and the issue was dropped from the WTO agenda (Sharma and Konandreas, 2008).

5. Bilateral and Regional Trade Agreements

Not all actions to alleviate the problem of export restrictions or to prevent the circumstances that give rise to them need be taken at the multilateral level. Bilateral and regional approaches have been tried and are being explored again.[11]

5.1 Bilateral Approaches

One strategy for importers in dealing with the question of export restrictions is through the negotiation of agreements that prohibit certain actions on a reciprocal basis. This is usually done in conjunction with agreed purchases. Such bilateral supply contracts have an irresistible logic. If either the supplier or the importer is concerned about sudden shifts in the access to a market or the availability from a particular source, then a long-term agreement may provide the assurance desired. The contract can both guarantee particular import levels and remove the risk of export embargoes. The 1970s saw some of these agreements, notably the U.S.-USSR pact on grain sales and similar agreement between Japan and the U.S. on soybeans and Japan and Australia on sugar.

[11] Section I addresses the range of unilateral choices open to countries to manage markets. Some countries have voluntarily avoided the use of export restrictions in market management. In the case of the US, taxes on exports would violate the Federal Constitution (and those of several States).

The question is whether such agreements were simply a function of the state of markets at that time or whether they could be useful in the current circumstances. In the 1970s, it was common for commodity imports to be handled by state trading entities, and that was also true for much of the export trade for grains. Contracts between single desk sellers and state import agencies could and did give some stability to bilateral trade. But these agreements did not help the market itself; countries that were excluded had to absorb more instability and uncertainty. The flexibility of countries to shop around for supplies when required would also be compromised. Whether prices would be higher under such agreements would depend on whether it was the exporter or the importer that wanted to reduce risk. In general, with the private sector handling much of the commodity trade, and with active futures markets on which risk can be controlled, the prospect for bilateral contracts seems unattractive. They would at the least add to the controversy about the activities of state trading exporters. In addition, they would appear to fall afoul of GATT principles by moving away from most-favored nation treatment.

5.2 Regional Approaches

Regional trade groupings are also an obvious location to negotiate restraints on the restriction of exports within the bloc — though not necessarily restrictions and taxes on extra-bloc trade. The EU goes further than other regional agreements in prohibiting both export restrictions and export taxes on intra-EU trade. As regional trade is a large fraction of global trade, these regulations are of potential significance to the market.

One regional initiative that extends the principle of open access to all regional markets has been suggested in the Asia-Pacific Economic Cooperation context. The APEC Food System proposal includes “a guarantee of non-discriminatory sales” that is crafted to cover both open access to markets and assured access to supplies.

The treatment of export taxes within NAFTA is also unequivocal: they are banned unless the same taxes apply to local sales (Article 314). However, Mexico was granted some temporary exemptions from this provision, allowing it to continue some export taxes on agricultural goods. Export restrictions were also banned unless they were in accord with Article XI:2(a) or Article XX of the GATT (Article 315): again, Mexico was relieved of this obligation.

The treatment of export taxes in MERCOSUR, by contrast, is largely an unresolved issue. Argentina, as a frequent user of export taxes, has argued that these are not distorting of trade within MERCOSUR.[12] Uruguay in particular disagrees and has proposed tight controls on such taxes. A recent discussion of the topic in the context of a revision of the MERCOSUR customs code proved unproductive. The issue will come to a head again if negotiations for an FTAA are resumed: the different approaches to export taxes and restriction between NAFTA and MERCOSUR will presumably have to be reconciled.

One regional initiative that extends the principle of open access to all regional markets has been suggested in the Asia-Pacific Economic Cooperation context. The APEC Food System proposal includes “a guarantee of non-discriminatory sales” that is crafted to cover both open access to markets and assured access to supplies (APEC, 2008). This initiative would seem to curb the ability of exporters within the Asia-Pacific region to withhold supplies, even to stabilize prices on their own markets. It would also give exporters assurance that import markets would not become closed (presumably at times of low prices). This balanced solution could act as a model for other types of agreement.

[12] One distortion that is claimed by other members is that Argentina favors its flour milling industry by its export tax on wheat. This is an illustration, in a different context, of the problem of differential taxation.

6. Market Stability-Intergovernmental Commodity Agreements and Stocks

An alternative to pursuing disciplines, which more effectively curb export restrictions, could be to make market stability itself an objective of trade rules. Such an approach cuts across the divide between importers and exporters. Stabilization of prices would be a more fundamental way of dealing with export restrictions, as the major underlying cause of such restrictions would be removed. The need for export subsidies and similar policies would also be reduced. There are arguably benefits to stability that complement and enhance the more traditional benefits from trade. Certainly, the aim of many trade rules to lower transactions costs would be furthered by an improved environment of regular supplies and steady prices. However, the history of multilateral action in the area of price stabilization has not been encouraging.

The history of multilateral action in the area of price stabilization has not been encouraging.

The most common examples in agriculture are the participation of countries in international commodity agreements. International commodity agreements have taken several forms. At one level are those that are based on improving information flows among importers and exporters.[13] At the other extreme are those few agreements that have economic provisions, involving price bands and stock rules.

A succession of International Wheat Agreements (IWA) has experimented with most of these devices. The first such agreement was signed in 1933 and lasted for a couple of years.[14] The agreement was based on quotas allocated to exporters. In 1949, a new IWA was crafted with maximum and minimum prices, and this was extended several times until 1967, when a Conference authorized by the Kennedy Round participants forged a new agreement to try to better manage trade in wheat. The new pact was labeled the International Grains Arrangement (IGA) (though it only applied to wheat) and lasted from 1968 until 1971. The IGA broke new ground by including a Food Aid Convention (FAC) as well as a Wheat Trade Convention (WTC). In 1971 the economic provisions (WTC) were dropped, and the agreement focused on market information. The FAC has continued to this day as a useful vehicle for pledging food aid in quantitative terms. The attempt to agree on the terms of a stronger wheat agreement in the Tokyo Round, with stock holding rules as well as price bands, led to a tentative revised IWA: the negotiations were shifted to the International Wheat Council (where the Soviet Union could join in) but failed in the end to reach a viable conclusion.

The management of commodity agreements has been difficult, and they have generally been short-lived. Such agreements impose high costs when not needed and break down when they are. The main issue with commodity agreements is one of strongly divergent incentives in the setting of price and stock rules. Exporters have a shared goal of high and stable prices, and therefore will sign on to agreements that fix prices above market levels. But this can only be done if supplies are restricted. The allocation of the burden of such supply restraints, and the problem of preventing non-members (or even members) from expanding output has not been solved. Importers want price ceilings and supply guarantees, neither of which is palatable to exporters. So agreements negotiated over many years tend to collapse in a few short months when faced with the reality of market conditions. Moreover, most agree-

Commodity agreements negotiated over many years tend to collapse in a few short months when faced with the reality of market conditions.

[13] The International Dairy Agreement and the International Bovine Meat Agreement that both emerged from the Tokyo Round had mainly informational content. This does not mean they had no impact: the IDA persuaded the U.S. and New Zealand to hold stocks of dairy products off the market and the EU saved $1 billion in export restitutions.

[14] This was not the first commodity agreement. An International Sugar Agreement among exporters had been launched in 1902. The first coffee agreement was signed in 1963 and one for cocoa in 1973. Other agreements have covered agricultural raw materials rather than foodstuffs.

ments assume that the public sector has reasonable control over stocks and exports: in a global market where private traders co-exist with state traders it is less easy to manage stock levels or trade volumes.[15]

As a result of the frustration that many governments feel with their inability to have any influence over world price levels, there has been renewed discussion about the possibility of negotiating international commodity agreements that might help to control prices on the world market and remove the need for export controls. This reversion to the ideas of the 1960s and 1970s is not surprising: the topic has a long history in the GATT and in UNCTAD and various intergovernmental commodity bodies. Somewhat more surprising is the apparent accommodation for commodity agreements in the Doha Draft Modalities. Under the subheading "Commodities" in the market access pillar, coming right after the subheading "Tariff Escalation," the Draft elaborates in eight paragraphs a revised approach to the negotiation of international commodity agreements.

The main point of this section of the Draft Modalities (not in squared brackets, so one must assume that the Chairman thought that agreement was possible on this text) is that:

- Provision shall be made to ensure the possibility that Members may take joint action..., including through adoption of international commodity agreements, for stabilization of prices for exports of agricultural commodities at prices that are stable, equitable and remunerative.

The provisions in the draft modalities reaffirm the existing language of Article XXXVIII of the GATT that such arrangements can be negotiated. Of note, however, is the inclusion of a definition of the term "arrangements," which includes agreements to which only commodity-dependent exporters are parties. This language raises the question of whether exporter cartels would be encouraged and given the cover of WTO legitimacy under the market access provisions. Indeed, the WTO has apparently agreed to give assistance to countries seeking to negotiate such agreements and has suggested monitoring these through "Aid for Trade" programs.[16]

It is relatively easy to imagine a group of countries setting up agreements among themselves to hold stocks. The most convenient way to do this would be through existing regional trade agreements. One example of a regional agreement on stocks is the 1979 ASEAN Food Security Reserve scheme for maintaining stocks of rice earmarked by member countries (originally 50,000 metric tons but later increased to 87,000 metric tons) in case of a shortage in any of the member countries (ASEAN Secretariat, 2008). The scheme has operated for thirty years but has rarely been used; member states in ASEAN have been reluctant to announce an "emergency" situation.[17] The question that arises in any such scheme is who pays for the stocks and who decides on their release? When prices are high there is likely to be a market price effect that will be to the disadvantage of certain member countries.

Somewhat more consequential over the years has been the management of stocks of grains as well as other commodities in the EU. Until the 1980s, these stocks were pure "surpluses" accumulated as part of the mechanism for maintaining domestic prices. In recent years, the EU stocks themselves have been more actively managed, but they still represent an element of the domestic market management rather than a tool that can be used to improve the reliability of export supplies. But there is no doubt that the existence of stocks at the EU level impacts the behavior of traders within the EU itself.

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[15] A telling critique of international commodity agreements can be found in Newbery and Stiglitz (1981). Though not unsympathetic to the aims of such ICAs, the authors point to the narrow conditions under which they are likely to be effective. For example, if private firms base their own stockholding decisions on how much reserves the government is holding, the net effect of government stock management may be much less than imagined.

[16] Revised Draft Modalities for Agriculture TN/AG/w/4/Rev.4; pars.95-102

[17] As an acknowledgement of the ineffectiveness of the ASEAN scheme, discussions have continued on a wider food security reserve with the participation of Japan and China. Japan has led these initiatives, but this was not enough to dampen the rise in the price of rice in 2008.

A modification of the management of stocks in an international commodity agreement has recently been proposed by von Braun and Torero (2008). This would entail the building of a "virtual" grain reserve, designed "to calm markets under speculative situations, backed up by a financial fund."[18] The virtual reserve and its operation would be set up by a group of countries, each of which would pre-commit funds for possible intervention in the grain market. The intervention would be in the futures market, triggered by advice from a "global intelligence unit" that the futures price was being driven by speculation and was not justified by fundamentals. By selling short, the aim is to curb speculation: the pre-committed funds would be used only in those situations where grain would have to be purchased to liquidate the contracts. Such coordinated action in the futures markets may prevent wild price swings and remove some of the incentives for export restrictions.

7. Options to Pursue

There is a range of possible options to deal with the uncertainty and disruption caused by export restrictions, in particular if one includes approaches to the underlying issue of price instability. Table 4 below shows the range of actions and the different scope of these agreements — two countries, a regional group, a number of countries or a global pact involving the WTO.

Table 4: Range of Options to Reduce Price Instability and Remove Need for Export Restrictions

	BILATERAL	REGIONAL	PLURILATERAL	MULTILATERAL
Build up and manage stocks; offset speculation in futures markets		ASEAN rice stocks; EU stockholding policies	IGA, IWA, UNCTAD/ IPC; virtual stocks and futures market intervention	
Long term supply contracts	US-USSR grain pact; Japan-US soybean agreement; Japan-Queensland sugar agreement			
Prohibit quantitative restrictions; bind, reduce or eliminate export taxes		EU outlaws bans on intra-trade; APEC Food System proposal		Stronger Article 12, URAA; Tariffication of export restrictions; binding and reduction in WTO
Codes of conduct				Exporter safeguards; Possible "critical mass" agreement among exporters

Source: Tim Josling

[18] The proposal also includes a minimum physical reserve for humanitarian assistance, to be managed by the World Food Program.

If it is agreed that the problem of price instability should be addressed in trade rules, the alternative approaches are relatively few. Most fundamentally, the international community can make sure that an adequate level of stocks is on hand to offset any sharp drop in supply (or increase in demand), but as the previous section demonstrates, such international stocks are hard to manage and costly.

Alternatively, countries can negotiate long-term contracts between suppliers and importers that insulate the contracting parties from some element of risk. Bilateral supply contracts either explicitly or implicitly reduce the risk of export disruptions and are relatively easy to negotiate. But in today's global markets and the diminishing role of state traders, this approach seems to have limited application.

Countries can also agree to prohibit bans and embargoes or restrict the use of export restrictions. This can be accomplished via regional trade agreements, and export restrictions are usually prohibited where there is deep integration. However, regional agreements are unlikely to be able to meet the needs of all importers — an importer would have to belong to the same regional agreements as the major suppliers of each of the imported foodstuffs. Plurilateral arrangements can help to manage commodity markets, by way of price bands, stock rules, or futures market intervention. But the track record of such agreements is not good, and they only indirectly address the problems of the importer.

This suggests that action at the multilateral level is required, and we therefore conclude with a discussion of how to make further progress at the multilateral realm.

7.1 Multilateral Approaches

The actions that have been suggested at the multilateral level include the strengthening of Article 12, URAA, through inter alia the tariffication of export restrictions and the binding and reduction of export taxes. Tariffication by itself is unlikely to solve the problem. It is true that from an analytical viewpoint there is a parallel between converting quantitative import restrictions into the equivalent tariffs and converting export restrictions into their equivalent export taxes — there will be a tax level that has the same effect on the volume of exports as the quantitative restriction. Yet the analogy is potentially misleading: export bans on foodstuffs are not often a permanent feature of an exporter's policy,[19] and if the ban is only to be used under particular market situations, the problem of calculating a tax equivalent may be a distraction from the real issue.

The use of export bans could simply be prohibited by removing some of the qualifications in Article XI, GATT(94) and Article 12, URAA. This would allow the exporter to convert to export taxes with the same (or more or less) effect at any time that it wishes without constraint or negotiation of export tax levels. So a prohibition without the binding of export taxes would seem to be toothless, and tariffication alone a distraction.

> The crucial question is whether there is enough of a common interest in making a link between contingent protection on the importer and the exporter side.

But there are problems that bedevil the question of binding export taxes. If the tax is only used once a decade, during a price spike, then exporters will want to bind it at a level that allows them the scope to continue such export management. It may be difficult to get these bindings down to a reasonable level. And the existence of bindings may give the impression that such taxes are a normal part of trade. So the strategy of importers may backfire: management of exports by taxes may become more widespread. However, if one combines the tariffication with a binding and a reduction of export taxes, then one is in effect curbing the ability of exporters to use any form of export restriction — although it seems more straightforward to phase out quantitative restrictions directly in parallel to cuts in allowable export taxes rather than go through the stage of tariffication.

[19] Bans or restrictions on exports of raw materials may be part of a longer-run strategy. India maintained a ban on raw cotton exports for many years so as to help its domestic textile industry.

If the analogy with import taxes and quotas is not quite perfect, it may be desirable to think of export restrictions as more like safeguards. Importers use safeguards at times when their domestic market is oversupplied and they fear for the economic survival of the domestic competitors. Governments use export restrictions when prices are so attractive abroad that domestic consumers cannot compete with overseas buyers. So if importing countries have safeguards in the form of temporary import restrictions, why should exporting countries not have similar safeguards? The exporter is intrinsically less likely to use such safeguards for fear of losing market reputation and dissuading investment in export industries; thus resort to an exporter safeguard is likely to be more limited than resort to import safeguards.

The crucial question is whether there is enough of a common interest in making a link between contingent protection on the importer and the exporter side. If so, perhaps the Doha Round debate over the Special Safeguard Mechanism (SSM) could be advanced if there were an "exporter safeguard" provision that allowed restrictions or taxes under certain circumstances. These could be based on price and quantity triggers, as with importer safeguards. They would not, of course, have to be invoked: most exporters probably would not do so. But for those exporters who wish to retain the ability to tax or ban exports they would be able to do so under agreed rules.

The inclusion of meaningful disciplines on export restrictions in the DDA Round negotiations could well alter the negotiating dynamics and contribute to renewed momentum. An alternative to such multilaterally agreed disciplines would be an agreement among exporters to resist the use of export restrictions.

The inclusion of meaningful disciplines on export restrictions in the DDA Round negotiations could well alter the negotiating dynamics and contribute to renewed momentum. An alternative to such multilaterally agreed disciplines would be an agreement among exporters to resist the use of export restrictions. The motivation for this would be that governments would give up a policy instrument that is often unpopular with domestic industry and leads to net welfare losses domestically and abroad. It is difficult to imagine exporters using export restrictions alone for any length of time, except for political reasons (which would not be restricted in a WTO context, as the country could claim a national security exemption). Other exporters would move in and increase their market share. So such export instruments are likely to be of short duration, and the effect on their status as reliable suppliers is likely to far outlast the action itself. Exporters in general have an incentive to maintain (or restore) the confidence of importers in the ability of the market to cover their needs. So a self-denying ordinance among exporters could be imagined, in particular if this were to help break a logjam in (say) a market access negotiation.

Such an approach to curbing exporter trade restrictions could also be packaged with other export competition issues under negotiation in the Doha Round. Perhaps one could put together an "exporters' code" that included the ending of export subsidies, both direct and through food aid, export credit guarantees and state-trading entities, as well as a ban on export embargoes and a limit on export taxes. This could be offered as a "stand-alone" component of the final Doha modalities. It could alternatively be seen as an "early harvest" if the Doha Round is not likely to be concluded soon and concerns about export availability persist. In political terms, such an arrangement would support an EU decision to eliminate the use of export subsidies even without a Doha Round conclusion, as the EU would gain assurances on supply availability, an issue of considerable concern. Developing countries, which have been concerned about stronger multilateral disciplines on export restrictions, may be more willing to accept a code, in particular if it secures a commitment on export subsidies.

Perhaps one could put together an "exporters' code" that included the ending of export subsidies, both direct and through food aid, export credit guarantees and state-trading entities, as well as a ban on export embargoes and a limit on export taxes.

Since such a code would aim to remove important distortions from the global agricultural market and address supply availability concerns, it could aptly be referred to as a "food security code." The details of such a code could be negotiated by those who are most affected (the exporters but also recipients of food aid) and implemented on a non-discriminatory basis.[20] In order to speed up such an agreement, it could be negotiated among a smaller group of countries, such as those accounting for (say) 80 percent of grain exports. The obligations would apply only to those that chose to participate. Its benefits of course would be applied to all WTO members.

[20] The question of negotiating parts of the WTO agenda in smaller groups is addressed in detail in the Warwick Commission report (2007). The Commission suggested that the concept of the "single undertaking" whereby all countries undertook all obligations had been responsible for slowing down the negotiating process (as all countries wanted to have an influence over the obligations that they were accepting). If groups of countries that constituted a "critical mass" in terms of shares of the market in question could negotiate more easily and more ambitiously, it would not matter that the obligations were not undertaken by all. One problem is that once the principle has been established for new agreements, there might be an unraveling of old agreements as countries seek to avoid obligations already accepted.

SECTION III: RECOMMENDATIONS

In this section, we conclude with a number of recommendations — both on alternative measures to ensure food security and on how to reach more effective measures to curb export restrictions.

1. Developing Alternatives to Export Restrictions

A country imposes export restrictions primarily due to food security issues (the case of staple grains) or to prevent loss of profits attainable through processing (for example, cashmere wool can be used to make woolen garments etc. to provide significant value added). Here are some recommendations for alternatives policies that countries can consider.

Countries such as India have adopted demand management techniques but with limited success.

1.1. The Case of Unprocessed Staples

In the case of staple grains, possible techniques include those on the demand side as well as the supply side.

1.11 Demand Management Techniques

When the international prices of staples like food grains are high, the government can opt for dual pricing instead of export restrictions (see Penson et al, 1999). In the case of the former, the government procures food grains from the open market and distributes these to the poor through fair price shops where prices are much lower than open market prices. The loss incurred by the government is the budgetary burden for this distribution program. However, through this method the government ensures an adequate food grain supply for the poor even when prices are high.

It is possible to argue that this program can be made self-financing through taxes on other products, say luxury goods etc. However, luxury goods are characterized by a price elastic demand, and excessive increases in per unit taxes might lead to diminished tax collections. Another alternative could be to tax consumption of the staple in the open market and use this to finance the difference between the open market price and the price at which the food grains are distributed to the poor. The problem here again is that when market prices of staples rise, the number of people needing protection from these through subsidy increases. In other words, the very act of increasing taxes would increase the number of needy people who have to be subsidized.

Countries such as India have adopted demand management techniques but with limited success. Public distribution of food grains in India has been beset with problems of corruption, theft, and lack of accessibility of the rural population to the distribution system (see CMS, 2005 for estimates of corruption). These factors compound the structural problems mentioned above.

Thus, it can be argued that demand management can only constitute a partial alternative to export restrictions. These have to be backed up by supply augmentation efforts.

1.12 Supply Side Interventions

Thus, it can be argued that demand management can only constitute a partial alternative to export restrictions. These have to be backed up by supply augmentation efforts. One of these is obviously public investment by developing country governments in irrigation, agricultural facilities etc. However, these governments are often cash strapped, and agriculture tends to be neglected. Two other alternatives are proposed here:

(i) Emergency grain fund: A multilateral organization like the FAO could procure grain from the international market every year on the basis of contributions from all its members and distribute it according to the needs of countries and specific conditions of famine/plenty etc. An official agreement about contributions from member countries needs to be reached.

(ii) Portfolio investment: Farmers in developing countries could form agricultural cooperatives, which could then sell their shares to both domestic and foreign citizens and institutions. The generated funds could be used to improve irrigation and storage facilities as well as undertake agronomic research. This should help to increase both country specific and world supply and do away with export restrictions. To the best of our knowledge, none of these measures have been adopted in developing countries to date.

While there are important steps that can be taken at the bilateral, regional and plurilateral level to discipline the use of export restrictions and address stock levels, action at the multilateral level would be optimal.

1.2 Agricultural Inputs into Processed Items

As far as agricultural raw materials used for processing are concerned, export restrictions hold down their prices artificially. Thus, if a ban is placed on the exports of apples, processors gain while apple producers lose. Both apple producers and processors can gain through appropriate measures to increase productivity on the supply side. In this case, efforts by processors to raise resources through the share/financial market could improve capacity as well as efficiency. As capacity increases, demand for apples will also go up, leading to an increase in the prices of raw apples. The processors on the other hand can neutralize higher prices of inputs through greater efficiency and higher sales.

2. Improving Trade Disciplines on Export Restrictions

While there are important steps that can be taken at the bilateral, regional and plurilateral level to discipline the use of export restrictions and address stock levels, action at the multilateral level would be optimal. Given the uncertain fate of the Doha Development Round, it may appear unwise to put so much emphasis on multilateral disciplines. Yet by incorporating improved disciplines to address export restrictions, which have been shown to exacerbate high food prices, the negotiations could well appear to be more relevant for countries with legitimate concerns about insufficient supply assurance. Meaningful disciplines on export restrictions, in turn, might facilitate a greater readiness by import sensitive countries to undertake greater market access opening. Any disciplines on export restrictions must address both quantitative restrictions and export taxes to be meaningful.

An exemption from export restrictions for food aid procurement should be implemented as a matter of urgency — regardless of whether this is to be incorporated into multilateral disciplines or into an agreed code of conduct. As recent experience has shown, it is no longer sufficient for the international community to consider the issue of food aid solely in the context of preventing measures equivalent to export subsidies. Equally important is to consider a reliable approach to the impact of high prices on the poor countries and families.

Should a Doha Round deal not be feasible in the near future, it may be worth reconsidering the way in which the elements of the agricultural package are negotiated. The progress on export competition suggests that it could be rescued from any long-term suspension of the Round. Indeed, a separable “exporters code” or “food security code” that included self-restraint on both export subsidies and export restrictions may be enough to move the stalled talks in a more positive direction.

An exemption from export restrictions for food aid procurement should be implemented as a matter of urgency — regardless of whether this is to be incorporated into multilateral disciplines or into an agreed code of conduct. As recent experience has shown, it is no longer sufficient for the international community to consider the issue of food aid solely in the context of preventing measures equivalent to export subsidies. Equally important is to consider a reliable approach to the impact of high prices on the poor countries and families.

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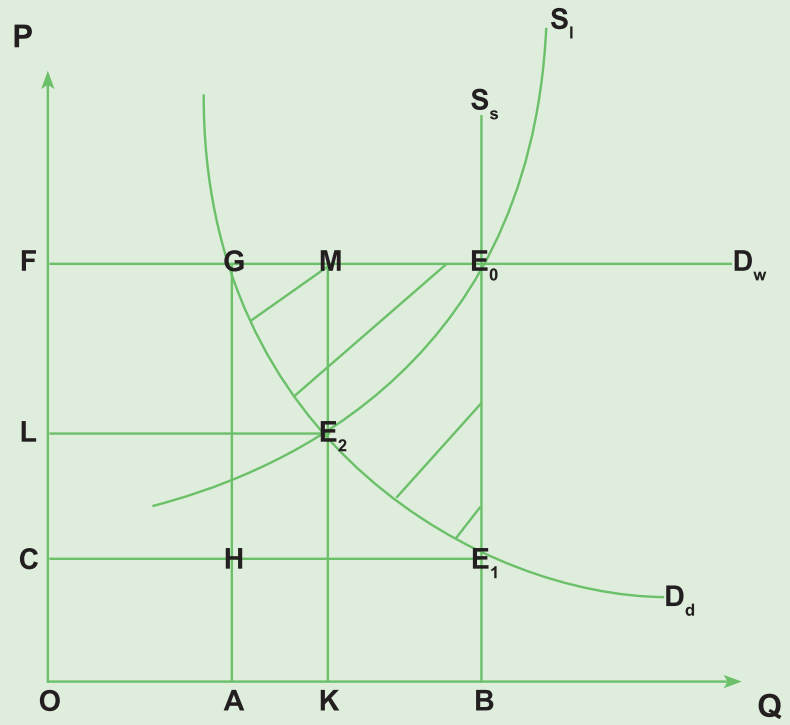
APPENDIX

I. Domestic Impact of Export Restrictions: Demonstration of Welfare Impact

(A) Consider the diagram below illustrating the effects of an export ban/embargo. Note that E_0 is the point of intersection of the country's short run supply curve for a given food grain, S_s with the world demand curve facing it, D_w. The world price in this case is given by OF, with OB being the amount produced; OA is quantity demanded domestically at the world price; and AB is the amount exported. The consumer surplus in this case is given by the area enclosed by the domestic demand curve, the vertical axis and D_w. The producer revenue in this case is given by OBE_0F.

Appendix Figure 1: Domestic Impact of Export Ban

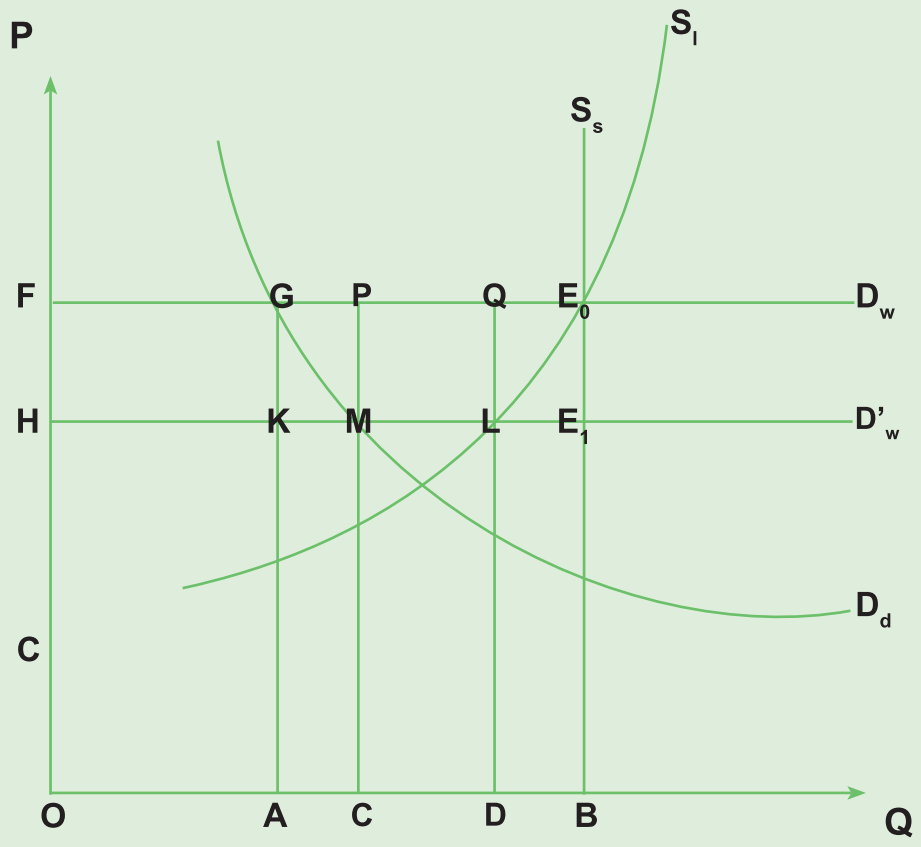


Now consider an export ban. In this case the producer's equilibrium shifts from E_0 to E_1 (the intersection of the domestic demand curve and the supply curve), which also depicts the equilibrium for domestic consumers. Price in this case is much lower at OC, though in the short run the quantity produced remains the same. Consumer surplus, for obvious reasons, increases by CE_1GF. However, the revenue of producers, for the same level of production, decreases by CE_1E_0 F which is therefore the loss in producer surplus. The net loss to the economy/society is therefore a positive amount given by E_1E_0G which is the shaded triangular region shown in Appendix Figure 1. This area decreases as the receptivity of domestic demand to price increases. Such receptivity is low for staples like rice, which are necessities and are not easily substitutable in consumption baskets. On the other hand, agricultural products like fruits and timber that lend themselves to significant processing exhibit much higher receptivity of demand to price. The explanation is as follows: a more inelastic demand

curve implies that a greater fall in domestic price would be required to bring about an increase in domestic consumption that equals the pre-ban level of export. Since every unit fall in price generates an additional decrease in producer revenue (which exceeds the consumer surplus generated), a more inelastic demand curve would imply a greater loss in welfare.

Note that this analysis is only for the short run, during which the supply curve is totally inelastic, as farmers do not have any noticeable flexibility in production decisions. However, the price decrease produced by the export ban would compel producers to pull land out of cultivation of the relevant crop and allocate it elsewhere. In other words, the supply curve in the long run for an agricultural product has the normal upward sloping shape. If the export ban is still valid, the new equilibrium will be given by E_2, the intersection of the long run supply curve S_l with the domestic demand curve D_d. The price in this case will be OL. Consumer surplus in this case will be higher than the consumer surplus in the pre-ban case by the area LE_2GF; producer surplus, in this situation, is less than that in the pre-ban situation by $E_0E_2M + E_2MFL$ (profits lost due to a decrease in production resulting from the ban, evaluated at the pre-ban price plus profits lost due to a cutback on price for the quantity produced after the ban). This implies that the net loss from the ban even in the long run is positive and given by $E_0\ E_2G$ i.e. the area enclosed between the country's long run supply curve, its demand curve and the world demand curve. This area decreases as receptivity of domestic demand to price increases and as the receptivity of supply to price increases. Commodities with less specificity of fixed capital and farming skills required for production will have a greater supply responsiveness to price.

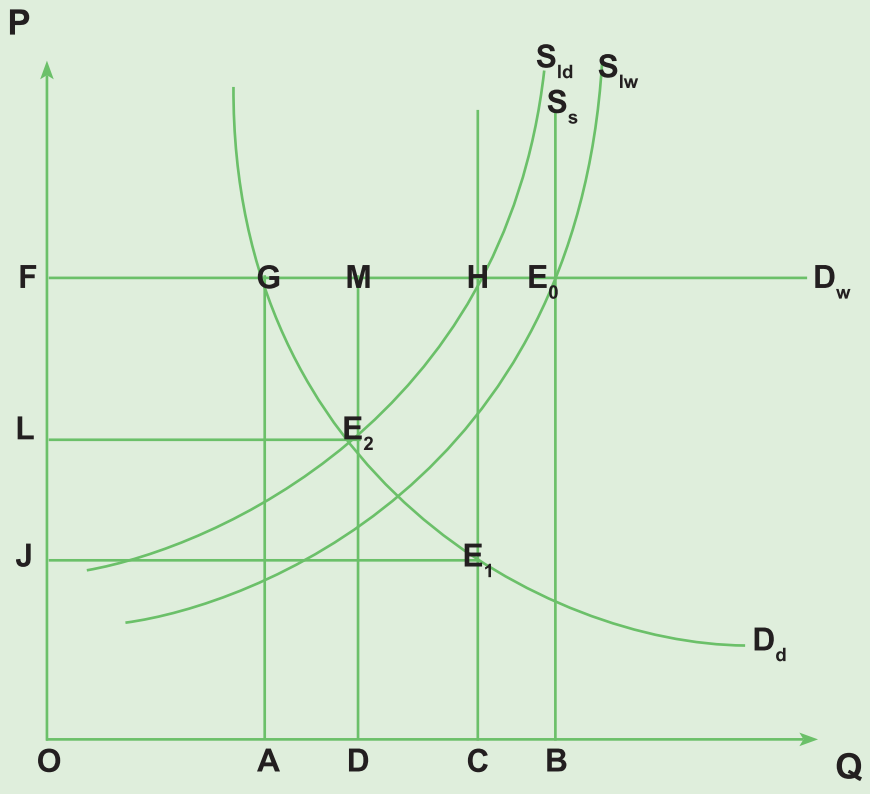
Appendix Figure 2: Domestic Impact of Export Tax



(B) Let us now consider the effects of an export tax, starting with the short run. The initial condition is the same as illustrated by Appendix Figure 2. The implementation of an export tax makes the domestic producer price higher than the world price, inducing suppliers to reduce exports and increase domestic supply. Competition among producers ensures that domestic supply increases till the price difference is totally eliminated. Thus, the export tax implies that the world demand curve facing the producers shifts downwards to D'_w.

Note that the amount produced remains the same because of the inelastic nature of the supply curve; there is a fall in domestic price to OH (world price minus per unit tax) and the amount consumed increases to OC. Exports thus decline on account of increasing consumption to CB and are less than the initial level by AC. The export revenue gained by the government is PE_0E_1M; the gain in consumer surplus is given by MGFH. The fall in producer's surplus is given by E_0E_1FH. The net loss to the economy is PGM, and this area is increasing as receptivity of quantity demanded to price increases, which in part depends on how easily the product can be substituted. Thus, we would expect the loss in the short run to be small in the cases of staple grains and large in the case of products like cotton or timber. This is because an export tax results in a fall in the level of domestic price equal to the tax per unit. For a given price decrease, the increase in domestic consumption is smaller for staples characterized by inelastic demand than for other agricultural products. Note that such increase in domestic consumption fetches the decreased price for the producer; it displaces exports which fetch the same low price for the producer but in addition fetch tax revenues for the government. Thus, the smaller the price elasticity of demand, the smaller the amount of exports displaced and the smaller the loss.

Appendix Figure 3: Domestic Impact of Export Quotas/Licenses



In the long run, the imposition of the export tax will cause producers to pull out of production of the relevant crop. The production equilibrium will be given by the intersection of the long run supply curve with the post-tax world demand curve. Quantity produced will be reduced to OD, while quantity consumed would be OC. Exports would be CD, and revenue from export taxes would be QLPM i.e. a gain for the economy relative to the pre-tax situation. Similarly, the relative gain in consumer surplus would be MGFH and the fall in producer's surplus would be E_0QL + QLFH. Thus, the net loss to the economy will be E_0QL + PMG. While the first component is increasing as the receptivity of quantity supplied to price increases the second component is increasing as the receptivity of demand to price increases. Thus, the welfare loss will be higher for non-necessities than necessities and less for those cultivated with specific fixed capital and skills than those not requiring these.

(C) Now consider the case of export quotas (refer to Appendix Figure 3). Given that the initial situation is the same as in the previous two cases, the imposition of an export quota equal to BC results in a fall in exports by AC and a corresponding increase in consumption. Domestic price falls to OJ. Producer revenue declines by E_1JFH. Consumer surplus increases by E_1JFG. The net decrease in economic welfare is E_1GH which is decreasing as the receptivity of quantity demanded to price increases. It is also necessarily less than the welfare loss from an export ban as in both cases this loss is 'half the product of export loss and the fall in domestic price.' Moreover, the former loss tends towards the latter as the export quota tends to zero.

In the long run, some producers will pull out of production because of the decrease in domestic prices. The supply curve facing the domestic economy will be the supply curve for the world economy shifted to the left by the amount of the export quota (as long as the restrictions are binding). The producer and consumer equilibrium in the long run is given by E_2. Compared to the pre-quota situation, quantity demanded increases by AD and price falls by LF; consequently consumer surplus increases by E_2GFL. Producer surplus on the other hand decreases by E_2MFL + HME_2. Thus, the net decrease in welfare is given by HE_2G which is the portion enclosed between the domestic supply curve facing the domestic economy, the domestic demand curve and the price line. This area is necessarily less than that depicting welfare loss in the long run from the export ban because in the latter case, the relevant supply curve is the domestic supply curve facing the entire world. Thus, the reduction in long run welfare from export quotas is less than that from export bans. However, in a manner similar to the short run, the former tends to the latter as the export quota tends to zero.

II. Global Impact of Export Restrictions: Demonstration of Welfare Impact

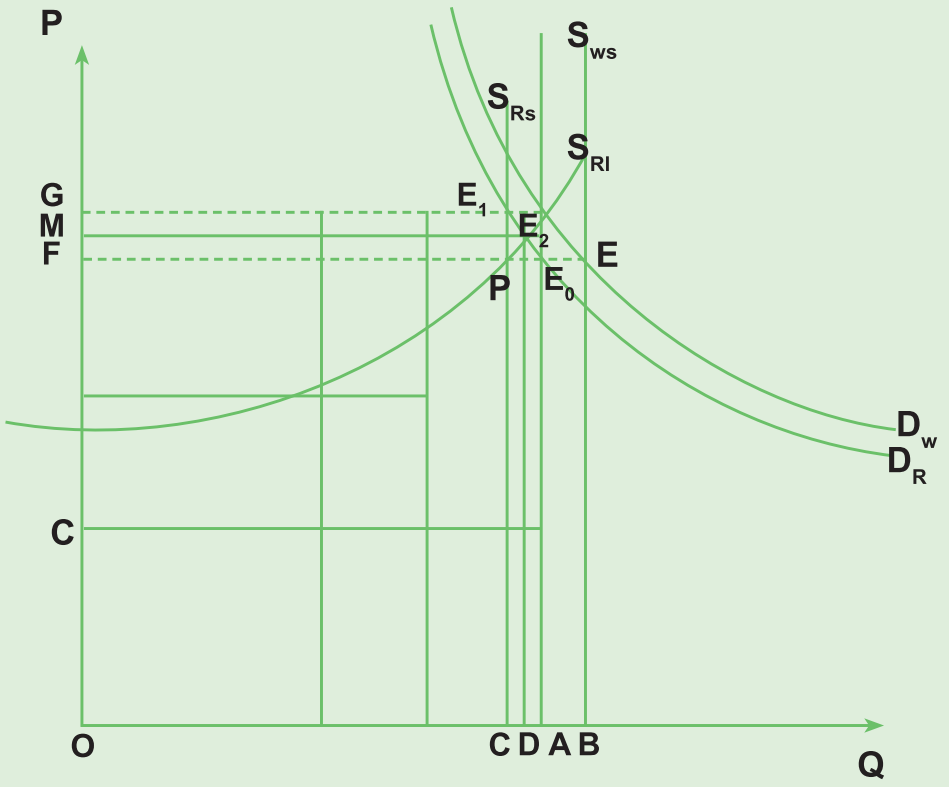
In the diagram given below (Appendix Figure 4) E represents the equilibrium in the international market where the short run world supply curve S_{ws} intersects the world demand curve D_w. Equilibrium price is OF and quantity demanded is OB. If we want to find out the quantity demanded in the rest of the world (ROW) i.e. world demand minus the country imposing the export restriction, then we read off the quantity demanded at price OF from the 'rest of the world demand curve' D_R. In this case, quantity demanded in the ROW equals OA and corresponds to consumer equilibrium E_0. On the other hand, the production equilibrium is given by P: the amount produced in the ROW is given by the short run price inelastic supply curve, S_{Rs} and equals OC. AC is the amount imported.

By imposing the restriction[21] the country of focus moves out of the ROW market. In that market, equilibrium is at E_1; price rises to OG and quantity demanded and supplied is OC. Consumer surplus decreases by E_0E_1GF while producer surplus increases by PE_1GF, implying that the welfare in the rest of the world decreases by E_0E_1P. Thus, not only does the welfare in the country imposing the restriction decrease, the world welfare from this sector also decreases. This area is decreasing as the receptivity of demand to price increases.

[21] In this case we consider a ban; because other restrictions have similar effects, they are not studied separately.

In the long run, producers in ROW respond to the price increase by cultivating more land with the crop under consideration. The new equilibrium E_2 is given by the intersection of the long run supply S_{Rl} with the curve D_R i.e. price readjusts downwards to OM and quantity supplied upwards to OD. The fall in consumer surplus compared to the pre-export restriction state is E_0E_2MF and the rise in producer surplus is PE_2MF. Thus, the net change in ROW welfare is negative and equal to E_0E_2P (which decreases as the receptivity of supply and demand to price increases). As in the short run case, therefore, both welfare of ROW and that of the country imposing the restriction fall.

Appendix Figure 4: Global Impact of Export Ban/Quota



III. Methodology for Estimating Change in World Welfare Due to Export Restrictions

The objective of this section is to develop a methodology for computing the change in global welfare that results from the imposition of export restrictions by a country and analyze the results. In this case we consider the Indian rice export ban.

The short run supply can be expressed as a function of time, given the reasoning that the marginal cost function itself depends on time i.e.

$$X_t = A + B\,t$$

Given that we do not have any data on how the cost of cultivation changes over time, it is very difficult to estimate a long run supply function.

Similarly the demand curve for any economy is given by

$$Q_t = F - Gp_t + LY_t;$$

where Q stands for quantity demanded, Y stands for GDP and p for price and t is used as a subscript to denote time periods. In other words, a higher value of t denotes a later time period.

We use additional subscripts *w, R* and *d* with variables as well as coefficients to refer to the cases of the entire world, rest of the world and the country imposing the restriction. Initially, when there is no restriction, we assume that the whole world economy is integrated. Equating world demand to supply yields the world price and quantity. This price then determines quantity demanded in India and the rest of the world in accordance with their demand functions for rice. However, an export embargo leads to the formation of a two rice markets: one for India and another for the rest of the world. In each market, price and quantity consumed are determined separately by the equality of supply and demand.

The coefficient estimates corresponding to the demand and supply functions defined above are presented below for India, world and ROW (Appendix Table 1). In all the estimations, annual observations for the period 1980-2006 were used.

Using projected GDP figures for the world (Appendix Table 2), obtained on the basis of time trends in the period 2001-2007, we can equate world demand and supply (functions) to get the projected world price and quantity for 2008 in the absence of an export ban. Using the projected world price for 2008, we can read off the quantities demanded by the Indian economy and the ROW economy from the respective demand curves for the same case.

Similarly, using projected GDP figures for India (ROW) from Appendix Table 2 we can equate the demand and supply functions for India (ROW) to get the equilibrium price and quantity for the case of an export ban by India. Projected estimates of price and quantity consumed for the world, ROW and India in 2008 under different scenarios are presented in Table 2 of the main text.

Referring to Table 2 in the main text the fall in ROW consumer surplus due to the export ban is given by ΔCS = [Quantity consumed under export ban* Increase in price due to export ban] +0.5* [Decrease in quantity consumed due to export ban* Increase in price] = 304.9 billion dollars. The increase in ROW producer revenues caused by the export ban in the short run is given by ΔPS= [Quantity produced by ROW in 2008* Change in Price Due to Export ban] = 298.52 billion dollars. The change in ROW welfare is given by ΔPS — ΔCS = -6.38 billion dollars. This decrease in ROW welfare is 0.2 percent of the Indian GDP and 0.01 percent of the world GDP.

Appendix Table 1: Estimated Regression Coefficients of Demand and Supply Functions

	FUNCTION TYPE	NO. OF OBS	ESTIMATION METHOD	R^2	DEPENDENT VARIABLE	COEFFICIENTS				
					Q	INTERCEPT	t	P	GDP	Q
World	SR SUPPLY	27	3 SLS	0.98	Q	-11405.61	5.9			
	DEMAND	27	3 SLS	0.64	P	5610.11			0.068	-21.64
India	SR SUPPLY	27	OLS	0.83	Q_P	-3010.54	1.55			
	DEMAND	27	OLS	0.83	Q_C	62.81		-.007	.0112	
ROW	SR SUPPLY	27	OLS	0.94	Q_P	-7245.92	3.78			
	DEMAND	27	OLS	0.96	Q_C	169.80		-.017	.0032	

NOTE: a) The following notation are used: Q — quantity transacted (million metric tons); t — year; Q_p — quantity produced (million metric tons); Q_c — quantity consumed (million metric tons); P — real price per ton in 2005 $; GDP (measured in billion 20005 $ at PPP)

b) All coefficients are significant at 5 percent level of significance

Appendix Table 2: Projections of GDP Per Capita for 2008

REGION	GDP PER CAPITA ($ BILLION)
India	3152.6
ROW	61447.5
World	64600.06

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The International Food & Agricultural Trade Policy Council (IPC) promotes a more open and equitable global food system by pursuing pragmatic trade and development policies in food and agriculture to meet the world's growing needs. IPC convenes influential policymakers, agribusiness executives, farm leaders, and academics from developed and developing countries to clarify complex issues, build consensus, and advocate policies to decision-makers.