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The Agricultural Challenges in the Twenty-First Century

by

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Abstract

This paper focuses on the challenges that are facing world trade in agriculture. High on the list is the difficulty that will arise if the trend of world agricultural prices over the past half century is reversed and a secular upward trend replaces it. If the future holds higher prices for agricultural commodities, the discipline over agriculture so far achieved under the WTO, and even that which would be augmented under the Doha Round, is fighting the last war. WTO disciplines, including those proposed under Doha, while desirable because prices will surely be low part of the time, are based on the premise that there is a secular trend for falling world prices of agricultural commodities, and that distortions arise because of overproduction. If, instead, distortions start to take the form of export restrictions on the part of agricultural exporters, the problem may be quite different in the future. Protection by high-cost producers may result when importers find their supplies reduced or cutoff when prices are high. A major reason for completion of the Doha Round is that issues such as the need for discipline over agriculture in times of high prices need urgent attention. While Doha languishes, these issues are not being addressed.

Keywords: Agricultural prices, World trade, trade restraints, WTO, Doha Round, Uruguay Round.

JEL Classification No.: F10, F50, Q17.

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† Senior Research Professor of International Economics, School for Advanced International Studies, Johns Hopkins University, and Senior Fellow, Stanford Center for International Development. I am more heavily indebted to David Orden, Lars Brink and Tim Josling than is usually the case with an acknowledgement. They provided support not only by providing data but also in navigation through the complexities of the Uruguay Round. The Orden, Blandford and Josling (2011) volume is invaluable in expositing the outcome of the Uruguay Round. I am also grateful to Simon Evenett for sharing his GTAP results as presented in Table 2. The responsibility for any errors of fact or interpretation in the paper is solely mine.
THE AGRICULTURAL CHALLENGE IN THE TWENTY-FIRST
CENTURY
Anne O. Krueger

It is a great pleasure to participate in a conference honoring Patrick Messerlin. He has been a key contributor to understanding of the costs of protectionist measures and of the benefits of an integrated international economy. He has also been, in my judgment, exceptionally brave, taking on “sacred cows” at a time when opinion of policy makers was firmly set in inappropriate directions and when the likelihood that opinion might change seemed small. I congratulate the organizers for recognizing Patrick and Patrick for all that he has accomplished.

My focus is on world trade in agriculture. If some forecasts are right, the future problems of global agriculture will be associated with demand rising more rapidly than supply. Assuming those forecasts are right, the (relatively little) discipline over agriculture so far achieved under the WTO, and even that which would be augmented under the Doha Round, is fighting the last war. WTO disciplines, including those proposed under Doha, while welcome, are based on the premise that there is a secular trend for falling world prices of agricultural commodities, and that distortions arise because of overproduction. If, instead, distortions start to take the form of export restrictions on the part of agricultural exporters, distortions may be quite different in the future, although protection by high-cost producers might still be part of the problem.

Background

Although the liberalization of trade in manufactured goods has been a triumph for the GATT/WTO over the past sixty years, the fate of trade in agricultural products has
been disappointing. Until the Uruguay Round, there was virtually no GATT/WTO discipline over trade in agricultural products. Many countries that were natural importers evoked “food security” as a basis for protection. Even some countries that should have had a comparative advantage in a number of agricultural commodities discriminated so much in favor of manufactures that they became importers!¹

At the founding of the GATT after the Second World War, agricultural production was well below pre-war levels in Europe and Japan, and it was natural that incentives be given to restore productive capacity. And, in the case of the United States, programs that had begun during the Great Depression with the intention of protecting agriculture were outside GATT disciplines as they were grandfathered into the initial agreement. Meanwhile, many other countries invoked the need for “food security” or “foreign exchange shortage” (especially in the case of developing countries) as a rationale for maintenance of domestic prices well above world levels through import prohibitions, high tariffs, or quantitative restrictions on imports of agricultural commodities.

Agricultural production increased rapidly as disruptions from the Second World War were overcome. Although tariff barriers on manufactures were falling as a result of multilateral tariff negotiations, distortions resulting from protection for agricultural commodities and the search for “food security” increased the global misallocation of agricultural resources. Once agricultural production was above prewar levels in Europe, the Common Agricultural Policy protected European farm prices and, for an extended period, resulted not only in increased protection but also in subsidization of exports for

¹ See Krueger (1992) for estimates for a number of countries in the mid-1980s.
some agricultural commodities.\textsuperscript{2} The Japanese, and later the South Koreans, built high walls of protection against imports for many agricultural commodities, with tariff equivalents for rice and some meat products of several hundreds of percentage points.\textsuperscript{3}

The United States, as already mentioned, maintained its program of price supports and other assistance for agriculture, although it was a net exporter of agricultural commodities. If any one of the three groups – the Europeans, the Americans and the East Asians - had removed their farm programs unilaterally, adjustment costs would have been far greater than if they could have found a coordinated approach. To a degree, each used the others’ protection as a rationale for maintaining their own. For both reasons, agricultural protection was crying out for a multilateral solution.

Most developing countries, meanwhile, were attempting to provide incentives for increasing domestic production of manufactures, using tariffs and quantitative restrictions on their imports (on agricultural commodities, on consumer goods, and even on farm inputs), with overvalued exchange rates\textsuperscript{4} which penalized agricultural exporters. There were also high prices for domestically produced manufactured inputs for agriculture and import-competing consumer goods, so that the terms of trade turned severely against farmers in many poor countries.

For the world as a whole, there appeared to be a secular trend toward falling relative prices of agricultural commodities, and the global problem appeared to be to

\textsuperscript{2} It will be recalled that the variable levy under the CAP maintained high prices for producers and in some years resulted in production in excess of domestic consumption so that exports were subsidized.
\textsuperscript{3} See Anderson and Hayami (1986) for a discussion.
\textsuperscript{4} Nominal exchange rates were kept fixed for long periods despite inflation rates much above those in the developed countries and hence overvaluation was rife. The rationale for this was that it would make imported capital goods cheap and thus enable more investment. The difficulty was that with overvalued exchange rates the incentives for exports were weakened, foreign exchange earnings rose less rapidly than demand for foreign exchange, or even stagnated, and hence exchange controls tightened and imports of capital goods could not increase as had been expected.
reduce distortions in agriculture primarily through reducing incentives for production in
developed countries at above-world prices. Yet, increasing agricultural productivity in
some developing countries by enough to meet upward shifts in their demand from rising
per capita income and growing populations appeared to be a virtually insurmountable
challenge.

The Uruguay Round.

Until the Uruguay Round, it had proved impossible to agree on any multilateral
discipline over production and trade in agricultural commodities. In part this was because
of the domestic priorities individual countries and groups of countries gave to their farm
objectives. But in part the problem was that, unlike manufactures, different countries
adopted differing combinations of import tariffs and quantitative restrictions, domestic
price and income supports, and export subsidies to try to achieve their objectives.
Moreover, again unlike manufactures, there was widespread belief that developing
countries as a group had a comparative advantage in production of agricultural
commodities, and were harmed by the “overproduction” in developed countries. Whereas
industrial countries had collectively agreed to reduce tariffs on manufactures (in which
they generally did have a comparative advantage) and could lead the negotiations, they
were reluctant to alter their farm policies, and developing countries had, until Uruguay,
been free riders on the tariff cuts negotiated among the industrial countries and did not
consider taking leadership.5 By the mid-1980s, work by technocrats had suggested that
the measure, “producer subsidy equivalent” (PSE), could be used to render comparable

5 Once the issue is closely examined, it is not entirely clear that all developed countries have identical
interests in agriculture. Some are net importers of food products, and others are net exporters. Some have
comparative advantage in tropical commodities, and some in temperate. But it was considered that
developing countries as a group had an interest in reducing high levels of protection for agriculture in
advanced countries.
the aggregate protection levels in different countries despite their very different combinations of border and domestic measures to support agriculture. Calculation of annual PSEs was taken up by the OECD. At about the same time budgetary pressures, particularly in the EU, led to pressure to modify farm support programs.6

The Uruguay Round achieved the first serious GATT/WTO discipline over agriculture, although there was disappointment that the ceilings negotiated in the Round did not bind more. An average agricultural tariff cut of 36 percent was required of developed countries along with the conversion of import quotas into tariff-rate quotas (TRQs) and a number of other measures to reduce agricultural border protection. All of these were, in principle, designed to reduce total protection to agriculture. But by the time the tariff conversions and cuts were implemented, the actual reductions were far less than the aggregate measures suggested. The agreement left room for continued high tariffs for agricultural products in many cases. Limited reductions were also required in the quantity and value of export subsidies. These requirements added to the pressure on the EU for policy reform since export subsidization had been one of its key policy measures through the 1980s.

The outcome of the negotiations over agricultural domestic support programs was more complicated. It was agreed that agricultural support programs could be categorized as being in one of three categories: a green box, in which policies toward agriculture which were judged to have virtually no (trade-distorting) effect on output were placed; a blue box for “moderately distorting” measures where price support was tied to supply

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6 By that time, the European Union had had difficulties with mounting inventories of supported agricultural commodities. Perhaps the support program that most vividly typified the problem was that for butter. The “butter mountain” became a standard jibe at the CAP. But the variable levy (which took import proceeds and distributed them to farmers for “double protection” and the export subsidies of the CAP) led to widespread pressure for program modification.
restraint, and an amber box, which contained the trade-distorting measures. Only the amber box policies were subject to ceilings, as the green box was seen as a safe haven for support measures meeting its criteria. Blue box measures were thought to be steps toward reducing distortions. It was agreed that each country would list as amber all the distorting measures which increased incentives to produce above those that would have existed at world prices.

However, the actual measure to be employed by the WTO was not the PSE, but rather the Aggregate Measurement of Support (AMS).\(^7\) It was to be calculated for each basic agricultural commodity as the nominal amount of support from various price-distorting measures (including subsidies without ceilings on land use or production, and administered prices at above-world levels). A key element for most countries was market price support (MPS). However, in the agreement the way the MPS is measured differs from what economists would view as distortionary. First, the reference price, i.e., the world price relative to which support is measured was and still is fixed as the 1986-88 price, rather than the prevailing world price. Second, the domestic price is the announced administered price, not the price prevailing in domestic markets. Hence, in years of prices above those of the reference period, the AMS overstates the distortion, as the divergence between domestic prices and world prices is smaller than that measured in the AMS, while in years of low world prices, the AMS understates the distortions. Likewise, differences between the announced administered price and the domestic market price result in differences between economic market price support, as measured by the OECD in its PSEs, and as measured in the AMS.

\(^7\) See Orden, Blandford and Josling (2011), especially the chapter by Brink, for extensive discussion.
While high-support industrial countries committed to ceilings on their AMS support in the Uruguay Round, other countries (including the developing countries) committed to keeping any AMS support below specified *de minimis* levels. The Total AMS (TAMS) subject to the ceiling includes the sum of AMS support for each commodity and AMS support that is not product specific, if these levels exceed the *de minimis* allowances. Countries were to notify the WTO of any changes in their tariffs or TRQ administration, of their annual use of export subsidies, and of annual levels of domestic support. It was agreed that a Committee on Agriculture was to meet regularly, evaluate whether policies were appropriately categorized, and review the resulting magnitudes.

Table 1 gives indicators of the magnitudes of the OECD PSEs in 1986-88 and from 2002 to 2010 in percentage terms. Figures 1a through 1c provide a corresponding indication for the EU, Japan and the U.S. of what has happened to the nominal values of PSEs since 1986, along with the nominal values of their TAMS since first notified in 1994. As can be seen, by both measures, support has fallen in general. But the devil is in the details when it comes to measuring agricultural support.

Table 1. Indicators of PSEs

(percentage of farm income)

<table>
<thead>
<tr>
<th>PSEs</th>
<th>1986-88</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>22</td>
<td>18</td>
<td>15</td>
<td>16</td>
<td>15</td>
<td>11</td>
<td>10</td>
<td>8</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>E.U.</td>
<td>39</td>
<td>34</td>
<td>34</td>
<td>33</td>
<td>30</td>
<td>29</td>
<td>24</td>
<td>22</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>Japan</td>
<td>64</td>
<td>57</td>
<td>57</td>
<td>56</td>
<td>54</td>
<td>52</td>
<td>46</td>
<td>48</td>
<td>48</td>
<td>50</td>
</tr>
<tr>
<td>OECD Total</td>
<td>37</td>
<td>31</td>
<td>29</td>
<td>29</td>
<td>28</td>
<td>26</td>
<td>22</td>
<td>21</td>
<td>22</td>
<td>18</td>
</tr>
</tbody>
</table>

Figure 1c: US OECD PSEs and WTO AMS

- PSE Total
- PSE Market Price Support plus TAMS Price-Linked Payments
- Notified Total AMS
As shown in Table 1, the percentage PSE has fallen for the OECD as a whole and for the three largest industrial groups. By 2010 that drop primarily reflects two phenomena: on one hand, agricultural prices rose, especially late in the period. On the other hand, countries shifted their support for agriculture away from direct price supports (with no acreage limits) to other programs, such as blue box price supports with acreage limits or green box incomes support not dependent on prevailing prices or production levels. There was and is considerable variation in PSEs among farm commodities and among countries. The United States, for example, in a period of low prices during 2002-2004 averaged (as a percentage of farm receipts) a PSE of 33 for rice, 57 for sugar, and 40 for milk, but 4 for poultry, pork, and beef and veal, with an overall PSE of 18. Japan’s PSEs for rice, wheat and oilseeds were respectively 83, 85, and 57 with an overall average of 56.⁸

Figures 1a through 1c demonstrate some of the agricultural policy reform that has occurred as well as the complexity of disciplining this support within the WTO. For the EU, the nominal value of its PSE remains nearly constant over 25 years through 2010, so the percentage PSE declines as agricultural prices increase. EU policy has shifted dramatically over this period, with high levels of market price support (facilitated by export subsidies) being replaced by a nearly equivalent nominal value of direct income support payments. Both are counted in the PSE, but the reform is evident in the declining MPS component of the PSE (Figure 1a). The EU’s TAMS is comprised largely of MPS which declines in parallel with the OECD measure as administered prices were reduced. The new income support is reported in the WTO green box and not in TAMS, so the

⁸ Estimates are from Elliott, 2006. Table 2.4, p. 29.
EU’s policy path reflect the intent of the WTO to encourage countries to shift to less distorting support even as EU support in total remains relatively high.

Support is higher in percentage terms in Japan than in the EU but its support also has declined moderately in percentage and nominal terms. The WTO rules allow an anomaly of Japan’s TAMS subject to discipline dropping sharply in 1998 (Figure 1b) as administered prices were abolished for rice. Tariff protection showed no such sharp decline, so a large gap emerges between Japan’s PSE and its TAMS. The modest PSE trend downward in part reflects what Japan views as several significant policy reforms.

Finally, the United States has had quite a unique set of domestic support policies, with a larger component of government payments in the amber box and more noticeably counter-cyclical support than the EU or Japan. Support in the US peaks in the period of low prices at the start of the last decade, then declines sharply as world prices increased after 2007.

The large gap between the PSE of the U.S. and its much lower TAMS in recent years again reflects the difficulties faced in disciplining agricultural support through the WTO. This gap partly reflects green box income support payments adopted since 1996, similar to the policy reform of the EU. But the recent gap between the US PSE and TAMS also reflects large payments for crop insurance subsidies. These subsidies are recognized as coming from amber box measures, but escape being included in TAMS (and thus escape being counted against the US ceiling) because the notified crop insurance program is notified as not product specific, and thus the subsidies are below a high de minimis allowance.
For present purposes, two points are relevant from this brief review. First and most important, the Uruguay Round established a framework for WTO discipline over support to agriculture. Difficult as imposing disciplines has proven to be, for the first time agricultural support in all of its dimensions was on the table for reduction negotiations.

Second, the Uruguay framework was based on the assumption that the problem was that incentives for more production were greater than they would have been had commodity prices cleared in an efficient world market. Fortunately or otherwise, prices of agricultural commodities rose sharply as the Uruguay Round constraints were gradually coming into effect (starting in 1995). The result was that many countries had to do little or nothing to meet their commitments under the Round, as farm prices and incomes were generally sufficiently high that intervention costs were below the limits set forth in the final agreement.

When world prices of agricultural commodities fell by the late 1990s, most countries’ programs were still well within the limits set under the Uruguay Round, both because of the high 1986-88 base, and because countries had shifted from reliance on direct price supports to income supports with acreage limitations or other exempt measures. Farm incomes were therefore effectively protected at the same time as the limits on distortive measures negotiated in the Uruguay Round were observed.

With the Uruguay Round agreement in place, when countries have acted to reduce or redesign their support there has been a shift away from supports for commodity prices (and acreage under production) to direct income support, particularly in the EU. Countries have rarely been at a point of being constrained right against their agricultural
support ceilings but the most salient facts are that discipline had begun, and that countries were largely in compliance with it.

Nonetheless, there could not be any question as renewed negotiations began in 2000 that industrial countries were still subsidizing their farmers heavily. For the OECD as a whole, PSEs as a percentage of gross farm receipts were 37 percent in 1986-88 and still around 31 percent in 2002. For the EU, the corresponding figures were 39 percent and 34 percent, while those for the United States were 22 percent and 18 percent.

**The Doha Round**

The Uruguay Round ceilings are, of course, still in effect, as there has been no closure to the Doha Round. During the initial years of Doha negotiations, strengthened disciplines were negotiated and tentatively agreed, for agriculture.

If these measures were to become part of a final Doha Round agreement, they would further constrain distortive agricultural policies. As Orden, Blandford and Josling concluded: “We conclude that a Doha agreement built on the December 2008 draft modalities would achieve real progress on the path toward substantial progressive reductions envisioned in the 1994 Agreement on Agriculture. A Doha agreement…would impose some meaningful constraints, especially for developed countries.” (P. 420)

There can be little doubt that acceptance of these measures would improve the efficiency of world agriculture. Even if world prices of agricultural commodities are now on a secular trend upward, there are bound to be periods of low prices, and constraints on the degree to which there can be incentives for additional production would serve to reduce the variance in world prices of agricultural commodities. And even if the secular trend is now upward, it could reverse at a future date, just as the secular downward trend

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9 See Appendix B of Orden, Blandford and Josling, 2011 for an abridged text of the agreement.
of the past fifty years has perhaps now been reversed. Hence, the ceilings negotiated in Doha would represent progress.

This would be especially true if meaningful bounds on support for commodities such as ethanol and cotton could be included in the agreement. Despite the progress that would be represented should the undertakings already negotiated be enacted, there are special problems with a few key commodities, and these result in considerable distortions in the global economy.

Perhaps the most serious from a global viewpoint is ethanol, where it is estimated that more than 25 percent of the (maize) crop is now destined for production of ethanol. Originally mandated by the U.S. Congress as an environmental measure also consistent with renewable energy resources, subsequent research has indicated that the initially-assumed environmental benefits of ethanol from maize production are small (and may not even be positive) because of the energy, fertilizer, and other inputs used in growing corn and ethanol production.¹⁰ Not only that, Consumer Reports estimates that a very small fraction of ethanol produced is actually used as fuel, but that the credit given to auto producers for flex-fuel vehicles provides a significant subsidy as it greatly overstates the fuel savings by these vehicles and thus lets auto producers produce more gas guzzlers while meeting their overall required gas mileage limit.¹¹ Should the mandated increases in the ethanol content of gasoline be left unchanged into the 2020s, it is estimated that almost the entire U.S. maize crop would have to go to ethanol. Already, sizeable acreage has been diverted from soybeans and other crops or brought into production. The sharp

¹⁰ See, for example, Natural News.com/029076_ethanol_fuel.html/ June 26, 2010.
¹¹ Consumer Reports says that the credit “is quite literally a loophole big enough to drive a truck through for automakers that produce many gas-guzzling vehicles and SUVs”, and estimates that the energy lost through that credit more than offsets any conceivable energy saving, which is in any event controversial.
upward shift in demand for corn for ethanol is estimated to have accounted for 25 percent or more of the increase world grain prices.

Even for present levels of U.S. ethanol production from maize, there is a 51 percent tariff on imported ethanol (which is usually produced from a sugar base and is much more environmentally friendly) as well as a tax credit for ethanol production of 46 cents per gallon.\textsuperscript{12} Congress eliminated the tax credit subsidies in 2011, but the increased requirements for ethanol content of gasoline are deemed sufficient protection so that there was little protest from the industry.

Ethanol is estimated to be 70-80 cents per gallon more expensive to produce than petroleum based fuel. Redressing the ethanol situation will be difficult (as large investments have been made in ethanol plants), but will become more so as time passes. The impact on food supply and prices and the lack of benefit make a clear case for removal of the tariff and average fuel economy credits. But the refiners and corn growers are strongly resistant.

Another high-cost program is the U.S. program for cotton. The U.S. cotton price support program was enhanced markedly in the late 1990s, and resulted in a large increase in American production, much of which was exported. The result was a sharp drop in world cotton prices, with especially pronounced impacts on some small countries for whom cotton was the major export and a large part of small farmers’ incomes. West African cotton exporting countries were especially hard hit, as many small farmers relied on cotton for most, if not all, of their income.

The four African exporters consider that a sharp change in the cotton program, or compensation for their reduced export prices, are essential for them to support the Doha

\textsuperscript{12} Consumerreports.org/cro/cars/new-cars/news/ethanol/government-support-for 2/10/12
Round. Brazil pursued a WTO dispute case and eventually won some compensation. Negotiating a significantly lower cap on the support for cotton would result in an increased world price for cotton, with benefits for efficient use of agricultural resources and for the exporting countries.

For the EU, agricultural policy also remains distortive. In the European case, input costs have risen more than in the U.S., with the result that farm incomes have not risen as much in Europe as they have in the U.S. Nonetheless, Europe (as well as Japan and South Korea) also continue to have costly and inefficient farm programs.

Hence, completion of the Doha Round which includes the already agreed-upon strengthening of agricultural disciplines would be highly desirable and represent a significant step toward a more efficient world agriculture. That would leave for future negotiations, however, concerns about export restrictions if demand growth outstrips that of supply.

**Looking to the Future.**

As the Doha Round was still under negotiation, prices of agricultural commodities peaked in 2007-8. In most countries, farm incomes were at all-time highs: in the United States, average farm family income had already risen above average urban family income by 2002, and rose further above it when farm prices peaked.\(^{13}\)

As already seen, the disciplines negotiated in the Doha Round would have further constrained countries’ use of distortive measures in years of falling prices. But while the Doha Round has languished, it is quite possible that the distortions in world agricultural production may be changing. During the period of peak in prices in 2007-8, a number of

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\(^{13}\) It is estimated that a typical farmer in U.S. corn-producing states is earning between $750,000 and $1.4 million annually. See Steven Mufson, “Ethanol Subsidy Fight not Over”, P. A18, *New York Times*, June 16, 2011.
exporting countries (including especially Argentina, Russia and Ukraine) imposed
quantitative restrictions or outright prohibition on the export of key commodities. Table 2
lists some of the export restrictions applied to agricultural commodities over the ten
quarters starting from end 2008. The list is almost certainly not comprehensive and only
includes measures that were listed in sources accessible to GTAP compilers. The motive
for imposition of restrictions was to keep domestic prices below world prices.

Under present arrangements, such measures do not violate WTO disciplines.
While there are limits on distortive border and domestic measures that encourage
agricultural production, there are no constraints on export prohibitions or restrictions.\(^\text{14}\)

But many forecast shortages and rising prices of agricultural commodities over
the next half century, with rising population and real income growth. If that is correct
(and it seems to be the view of the majority of agricultural economists and the
agricultural policy community), the danger of increased distortions to agricultural
production almost certainly arises more from the risks of export limitations and the
reactions that they are likely to evoke. Not only will world prices rise further at times
when export restrictions or prohibitions are imposed, but countries importing agricultural
commodities will become concerned with their long-term food security and resort to
measures to induce more domestic production. The agricultural agreements already
negotiated in Doha are desirable not only because the future trajectory of supply and
demand is not certain but also because, even if the past trend toward lower prices is
reversed, there are bound to be price fluctuations and therefore periods of low, as well as
periods of high, prices.

\(^{14}\) Of course, under Doha, subsidization of agricultural exports was to cease, but that again is a measure
protecting against glut.
However, to increase the efficiency of world agriculture and to prevent (or restrict) the emergence of a new set of distortive policies guarding against high prices rather than low ones a discipline over export restrictions is also needed.

Table 2. Partial List of Restrictions on Agricultural Exports, 2008-2011

<table>
<thead>
<tr>
<th>Country</th>
<th>Restriction</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>Cap on cotton exports</td>
<td>8/16/2011</td>
</tr>
<tr>
<td>India</td>
<td>Extension of ban on edible oil exports</td>
<td>8/16/2011</td>
</tr>
<tr>
<td>India</td>
<td>Partial removal of export duty on basmati rice</td>
<td>7/4/11</td>
</tr>
<tr>
<td>Kyrgyz Rep.</td>
<td>Temporary export taxes on agricultural products</td>
<td>7/1/11</td>
</tr>
<tr>
<td>Serbia</td>
<td>Temporary export restrictions on wheat and flour</td>
<td>4/1/11</td>
</tr>
<tr>
<td>Moldova</td>
<td>Export ban on wheat</td>
<td>2/2/11</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Ban on export of raw cotton</td>
<td>11/15/2010</td>
</tr>
<tr>
<td>Ukraine</td>
<td>Export quotas on agricultural products</td>
<td>10/4/10</td>
</tr>
<tr>
<td>India</td>
<td>Extension on ban of pulses exports</td>
<td>8/19/10</td>
</tr>
<tr>
<td>India</td>
<td>Ban on cotton exports replaced by licensing</td>
<td>5/21/10</td>
</tr>
<tr>
<td>Argentina</td>
<td>Reference prices for designated exports</td>
<td>3/5/2010</td>
</tr>
<tr>
<td>Argentina</td>
<td>Export registration requirements</td>
<td>11/1/09</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Export tax on cacao beans</td>
<td>4/1/10</td>
</tr>
<tr>
<td>Argentina</td>
<td>De facto ban on bovine meat exports</td>
<td>2/1/10</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>Temporary ban on rice and milk exports</td>
<td>12/1/08</td>
</tr>
<tr>
<td>Egypt</td>
<td>Repeat ban on rice exports</td>
<td>9/24/10</td>
</tr>
</tbody>
</table>

Source: Simon Evenett, provided through correspondence from GTAP data base, November 2011.
It is easy to see the dangers. Export restrictions or prohibitions on the part of countries with comparative advantage would not only distort world agriculture, but intensify any trend toward higher prices for agricultural commodities. If exporters impose restrictions during periods of high prices, it is likely, if not certain, that importing countries will respond at least partially by increasing protection for their own domestic agriculture. This might be done in retaliation, or in the name of food security. And, if prices of agricultural commodities are expected to continue to increase (or even to be maintained at very high levels), policy makers in importing countries could also argue that increased domestic production would be, or shortly become, economic.\textsuperscript{15}

If that were to happen, distortions in world agriculture would increase. Moreover, it is likely that the average price of farm commodities would rise even more than they would with an efficient allocation of resources, while the fluctuations in world prices of agricultural commodities would intensify (as, perhaps, would fluctuations in individual countries as exporters lost their markets and importers were increasingly affected by domestic supply variations).

Certainly, if some countries that normally export impose quantitative restrictions or prohibitions on exports of key commodities at times of high prices, the fluctuations in world prices of agricultural commodities will intensify.

World prices of traded agricultural commodities whose exports are restricted will rise more during periods of high prices than they otherwise would. That, in turn, would

\textsuperscript{15} Martin and Anderson (2011) have estimated that, in the 2006-08 agricultural price surge, 45 percent of the increase in the price of rice and 30 percent of the change in the price of wheat could be explained by changes in border protection rates. For this initial price spike, many importers lowered border protection to ease upward domestic price pressure which exacerbated the impact on world prices of the export restrictions.
almost certainly evoke reactions from countries which, in an efficient allocation of resources, would be net importers of agricultural commodities.

Domestic prices in “natural” exporters would be lower because of restrictions on exports and hence there would be less production and more consumption, and smaller exports. Moreover, farmers in “natural” exporting countries would experience lower prices and therefore incomes both in times of high prices (because domestic prices would be below world prices) and in times of low prices (because the “natural” importers would be producing more, but consuming less because of higher prices, and thus importing less).

Hence, at a time of increasing upward pressure on prices of agricultural commodities (as is assumed here), production would be shifting from former exporters (the lower cost producers) to former importers (the higher cost producers). If, as is believed, it is desirable to increase agricultural output efficiently, the net effect would be in exactly the opposite direction.

Conclusions

Completion of the Doha Round would improve the world agricultural economy. It would, nonetheless leave numerous challenges. High on the list is the difficulty that will arise if the trend of world agricultural prices over the past half century is reversed and a secular upward trend replaces it. While the future trajectory of agricultural prices cannot be forecast with certainty, most careful assessments project increases.

If that is the case, the Uruguay Round disciplines over agriculture and their intensification under Doha will be useful, and should be ratified, but the WTO will be lacking disciplines over the additional distortions that might arise in times of rising prices.
For that purpose, an agreement to refrain from export restraints when prices rise would be needed.

Such an agreement would be greatly in the interest of agricultural exporting countries, and would result in lower average world prices than would happen if exporters (importers) move toward export restrictions (higher levels of protection against imports). If the world’s problem is, as would seem likely, rising world prices, there is a strong reason for bringing export restrictions under discipline now before future runups in prices induce more such measures.

If the future holds higher prices for agricultural commodities, it will also be highly desirable to find disciplines that balance trade-offs between environmental concerns and supply of agricultural products much more effectively than has happened to date. This could take the form of a discipline, such as that governing phytosanitary concerns, that requires scientific evidence of the existence of the supposed benefits of environmental measures and of the least-cost way of achieving the desired environmental outcome.

It is clearly desirable that the Doha Round be concluded. Even if all that is included is what is already on the table, there would be gains. For agriculture, increased discipline would benefit the global economy. But, in addition, a major reason for completion of the Doha Round is that issues such as the need for discipline over agriculture in times of high prices need urgent attention. While Doha languishes, it would not appear that these issues are being addressed.
REFERENCES


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