

## Options for Reducing the Aggregate Measurement of Support in OECD Countries

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*The URAA left in place uneven levels of domestic farm support across countries and commodities. This analysis examines two generic approaches to reducing domestic support in the World Trade Organization negotiations. The ceiling-reduction scenario reduces the URAA limits on countries' overall levels of domestic support. This approach leaves in place the uneven base support ceilings established by the URAA. The more restrictive support-leveling scenario places commodity-specific limitations on the level of support relative to total value of production, thereby reducing dispersion of relative support across commodities and countries. Potential adjustments in global and bilateral trade under these scenarios are discussed for selected countries and commodities. U.S. agricultural exports expand by similar amounts under both scenarios, even though the individual commodity adjustments are quite different.*

### Introduction

The Uruguay Round Agreement on Agriculture (URAA) created new global rules for the treatment of domestic farm support by distinguishing support policies on the basis of their market-distorting potential (table 4-1). The URAA placed “ceilings,” or limits, on support from programs presumed to be the most trade distorting (amber box support) while exempting other, more market-oriented, programs from any limitations under a set of special conditions (green box support). Another exempt category (blue box) was devised for payments related to production-limiting programs (U.S. deficiency and European Union compensatory payments), on the assumption that the limits offset at least some production and trade distortions.

The URAA also defined a single, quantifiable national indicator of trade and production-distorting support, the “aggregate measurement of support” (AMS), which includes the estimated value of only amber box policies. Developed countries agreed to reduce their AMS levels by 20 percent from a ceiling calculated as their average annual level of overall support provided in the base years, 1986-88. Thus, under the URAA, countries with the highest level of amber support in the base years were granted the highest support ceilings (fig. 4-1). By using an aggregate measurement of domestic support instead of commodity-specific support limits, countries could comply with their overall WTO ceiling and avoid a binding limit on support to

specific, highly protected commodities such as dairy, rice, and sugar (fig. 4-2).

WTO member countries have proposed a variety of alternatives for further reducing domestic support. Two generic scenarios are evaluated here:<sup>1</sup>

- a “ceiling reduction scenario” that reduces overall levels of domestic support ceilings from a 1986-88 base, allowing support levels to remain uneven across countries and commodities, and
- a “support-leveling scenario” which levels the dispersion of domestic support across commodities and countries.

These options were developed to illustrate the implications for world and U.S. agricultural trade of two general approaches to reducing domestic support. As such, these scenarios do not represent specific proposals under consideration in future negotiations.

Potential adjustments in global and bilateral trade under these scenarios are discussed for selected countries and commodities. In addition, reform of policies on raw agricultural products can change input costs for domestically processed agricultural products, affecting countries' competitiveness in processed products.

<sup>1</sup> This analysis evaluates amber box policies and does not evaluate the impacts of blue box programs such as European Union compensatory payments or green box programs such as U.S. production flexibility contract payments.

**Table 4-1—Treatment of domestic agricultural support in the Uruguay Round Agreement on Agriculture**

| Category                          | General criteria  | Examples of policies  |
|-----------------------------------|---|---|
| Exempt support (green box)        | Measures must be financed by the government rather than consumers and must not provide price support to producers<br><br>Specific criteria are defined for general government services, public stockholding, domestic food aid, direct payments, and other programs | Green box programs include direct payments to farmers that do not depend on current production decisions or prices; disaster assistance, and government programs on research, extension, and pest and disease control |
| Exempt direct payments (blue box) | Direct payments under production-limiting programs must be based on fixed area and yields, or cover 85 percent or less of the base level of production or head of livestock   | Blue box policies are direct payments to producers, linked to production of specific crops, but which impose offsetting limits on output  |
| Nonexempt support (amber box)     | Market price support, nonexempt direct payments, and any other subsidies not specifically exempted are subject to reduction commitments   | Amber box policies include market price supports, and output and input subsidies  |

Source: Uruguay Round Agreement on Agriculture, WTO.

### The AMS as a Starting Point

The AMS concept is a measure of production and trade-distorting domestic support that includes:

- government subsidy expenditures on agriculture
- the value of market price support (measured as the gap between domestic and fixed international reference prices) for commodities that receive administered or guaranteed price supports.

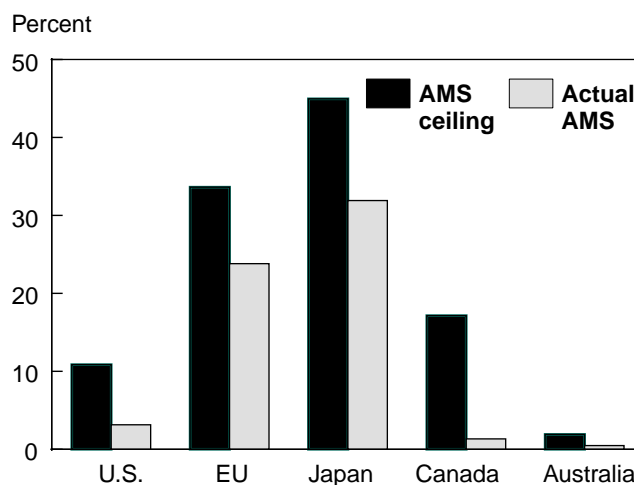
All domestic support policies included in the AMS have some effect on production and trade, but the magnitude of effects varies considerably among different types of policies (Young and Westcott, 2000; Rude, 2000).

This analysis uses a framework that recognizes that different types of amber box programs affect production and trade differently.<sup>2</sup> Output subsidies and market price support create the largest trade distortions by raising producer returns and thereby creating direct production incentives (table 4-2). Output subsidies

<sup>2</sup> Domestic support is measured in this study using (1) the OECD's producer support equivalent (PSE) measures of direct payments that are defined as amber box payments in the AMS concept, along with (2) tariffs and export subsidies as a measure of market price support for commodities that are supported using domestic administered price programs to guarantee minimum prices to producers. See appendix 2 for a more detailed discussion. Thus, the AMS market price support (administered price) programs are included, but they are measured in a way more consistent with the PSE concept, which emphasizes current market value of the internal-external price difference in the world, than with the AMS concept, which fixes the external reference price at 1986-88 levels.

directly stimulate increased production by increasing the expected returns from the subsidized commodity. Subsidies on variable inputs such as seeds and fertilizer, and on fixed inputs such as capital equipment and buildings, raise output by lowering input costs. Subsidies can also provide income support to the farmer through direct payments intended to achieve a guaranteed return. These payments affect only producers' returns and may be somewhat less distorting of consumer demand than market price support programs that fix market prices.

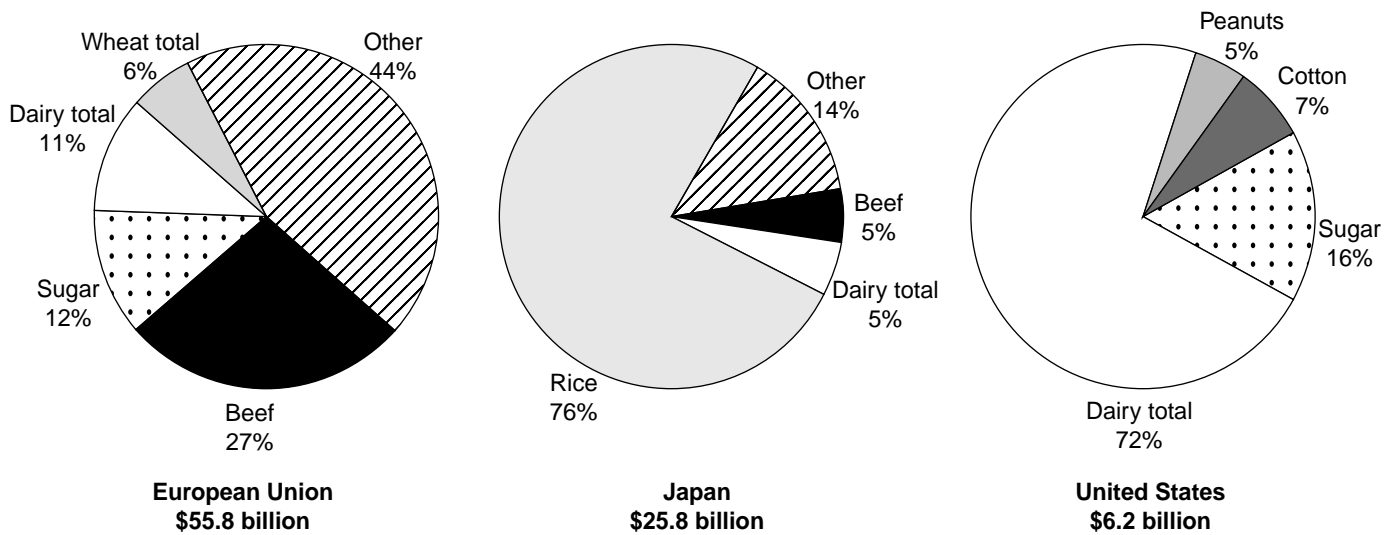
Figure 4-1  
**AMS ceilings and actual AMS as a percent of value of production, 1997**



Source: 1997 WTO notifications.

Figure 4-2

**Composition of AMS, 1997**



Source: 1997 WTO Notifications.

Market price support programs create a single price for producers and for consumers that is higher than the free market or world price of a commodity. The calculation of the market price support measure in the AMS explicitly accounts for the operational linkage between price support and trade policies. In order to maintain a domestic price that differs from the world price, most market price support programs rely on trade policies to restrict imports and may require export subsidies. In the absence of such trade policies, domestic price support and storage programs would become costly.

If the new negotiations continue within the framework of the URAA, market access limitations (tariffs and other trade barriers) and export subsidies will be addressed separately from domestic support, but reforms of the three policies are linked. Reductions in trade intervention alone could either reduce the effectiveness and current subsidy value of market price support programs as domestic prices fall, or lead to a higher current subsidy value if countries respond with larger expenditures on stock building or price subsidies.<sup>3</sup> On

<sup>3</sup> The WTO AMS calculation excludes support that does not exceed 5 percent of the member's total value of production (10 percent for developing countries.) But this *de minimis* support is included in our estimates of the AMS on the assumption that trade distortions do not begin or end when a threshold is reached. For example, the estimates in this analysis include U.S. support for programs such as crop insurance and irrigation subsidies that are considered *de minimis* for reporting to the WTO. This approach overstates domestic support.

the other hand, constraints on a domestic support program would not necessarily lead to a dismantling of trade barriers. Such barriers can be beneficial to the domestic sectors without the need for administered prices, although the administered prices provide an additional layer of intermediate support.

In this analysis, reductions in the AMS are assumed to be achieved by proportionally reducing all domestic subsidy expenditures as well as the related tariffs and export subsidies whenever commodities benefit from administered market price support programs.<sup>4</sup> Trade policies not related to administered prices are unchanged. In effect, tariff and export subsidy reductions lower domestic price levels and are used to represent market price support reductions, because further WTO constraints on domestic support would be difficult to achieve without reforming the related trade barriers that help keep domestic prices high. By reducing trade policies, we may overestimate the effects of reducing a domestic price support program, since in practice the domestic program could be administratively removed while leaving the trade policy in place.

Agricultural policy data are for 1998, the most recent year for which a comprehensive policy database could

<sup>4</sup> Technically, the calculation of the AMS as defined in the URAA would not change since it uses the gap between the administered price and a fixed base reference price, instead of the current market price, to calculate the effective level of support.

**Table 4-2—Amber programs used in OECD countries<sup>1</sup>**

| Category                                   | Production effects   | Examples of amber policies                 | Expenditures (\$ billion) |
|--|--|--|---------------------------|
| Market price support (administered prices) | Raises producer and consumer prices above world levels   | U.S. sugar program                         | 152 <sup>2</sup>          |
|  | This price control can be implemented through government purchase and storage programs, whereby the government agrees to acquire domestically produced commodities at the announced minimum administered price   | EU intervention price support              |                           |
|  | Administered prices in combination with trade policies, however, provide greater control over domestic prices, minimizing costs of purchase and storage programs   |  |                           |
| Output subsidies                           | Production incentives are greatest when subsidies are tied directly to specific commodities, since production decisions are based on the level of government payments in addition to expected returns from the marketplace; resulting increases in production tend to reduce domestic prices, leading to some increased domestic use and higher exports or lower imports | U.S. loan deficiency payments              | 9                         |
|  |  | Mexico's former guaranteed producer prices |                           |
| Capital subsidies                          | Use of capital inputs increases, leading to a longrun increase in production of capital-intensive products   | Investment tax credits                     | 3                         |
|  |  | Interest subsidies                         |                           |
| Other input subsidies                      | Output increases for commodities that use subsidized input   | Irrigation and insurance subsidies         | 7                         |
| Transfer payments                          | Whole-farm payments increase land values, raise wealth and investment, and reduce risk aversion; aggregate output increases slightly, but cross-commodity distortions are not created, so these subsidies are assumed to have a smaller impact on production than other forms of domestic support  | Canada's NISA                              | 4                         |

<sup>1</sup>Countries of the Organization for Economic Cooperation and Development are Australia, Canada, Czech Republic, European Union, Hungary, Iceland, Japan, South Korea, Mexico, Norway, New Zealand, Poland, Switzerland, Turkey, and United States.

<sup>2</sup>OECD PSE measure of price support. This analysis uses actual tariffs and export subsidies as a measure of market price support for commodities that have administered price programs.

be assembled. AMS support levels were estimated for 11 of the 15 Organization for Economic Cooperation and Development (OECD) countries for 1998 (see appendix 2).<sup>5</sup> Three OECD members — the European

Union (EU), Japan, and the United States — account for over 80 percent of all WTO domestic support ceilings. Appendix 3 documents the global computable general equilibrium model used to estimate scenario impacts.

<sup>5</sup> Australia, Canada, European Union, Japan, Korea, Mexico, Norway, New Zealand, Poland, Switzerland, and United States.

## Reform Options

WTO member countries have proposed a variety of alternatives for reducing domestic support. Two generic scenarios are evaluated here.

**The “ceiling reduction scenario”** extends URAA limits on the overall, aggregate levels of domestic support by imposing an additional 20-percent reduction in support level ceilings — down to 60 percent of the 1986-88 base. This leaves the base support ceilings established under the URAA in place, which are uneven across countries. It also continues to allow countries maximum flexibility to concentrate support on individual commodities (table 4-3). Although reductions in ceilings may cause countries to restructure the commodity allocation of their support, they are assumed in this analysis to achieve lower ceilings by reducing all types of amber box support among all of the supported commodities by the same percentage. Countries are thereby assumed to maintain the relative allocation of subsidies among crops from the model base year (1998).

The EU would be required to reduce 1998 AMS support by a moderate 7 percent across all subsidized commodities, while Japan would be required to reduce support by 10 percent. Many countries, including the United States, Canada, Mexico, Australia, and New Zealand, would not be affected by a further 20-percent reduction in AMS ceilings, since their 1998 level of support was already below the new ceilings.

**The support-leveling scenario** requires countries to limit commodity-specific support to no more than 30 percent of their 1998 value of production. This is a more restrictive scenario that reduces the dispersion of relative support across commodities and countries. The 30-percent value of production was selected because it permits the EU to maintain approximately the same level of aggregate support as in the first scenario. This provides a degree of comparability between the two scenarios. Countries that provide less than the maximum commodity-specific levels of support are assumed not to increase their subsidies. Proportional cuts are assumed for all policies for a commodity if the overall subsidy for a commodity exceeds 30 percent of the value of production.

Most countries have commodity programs that this approach would affect, including the EU, Japan, the United States, Canada, and Mexico (table 4-4). This approach achieves significant trade liberalization in commodities that tend to be most protected, including sugar and dairy.

In both scenarios, countries are assumed to continue to use the same types of policies as in 1998. In actuality, some countries have altered their programs in the interim, or AMS reform could lead to further policy change. If WTO domestic support ceilings are further reduced (scenario 1), countries will likely have opportunities for alternative ways to provide support to their producers. The use of blue and green box types of support may increase, or countries may elect to change the mix of allowable commodity-specific support to focus

**Table 4-3—Reduction commitments required to lower AMS another 20 percent from Uruguay Round ceiling**

|                | AMS as percent of<br>WTO ceiling in 1998 | Cuts in AMS required to reach additional 20-percent<br>reduction in WTO 1986-88 ceiling |
|----------------|--|---|
|                |  | Percent   |
| Australia      | 23                                       | 0   |
| Canada         | 9  | 0   |
| European Union | 74                                       | -7  |
| Japan          | 77                                       | -10   |
| Korea          | 80                                       | -14   |
| Mexico         | 7  | 0   |
| Norway         | 88                                       | -21   |
| New Zealand    | 0  | 0   |
| Poland         | 8  | 0   |
| Switzerland    | 71                                       | -2  |
| United States  | 45                                       | 0   |

Only OECD countries represented in the CGE model are included in this table (excludes Czech Republic, Hungary, Iceland, and Turkey).

AMS = Aggregate Measurement of Support.

Source: ERS estimates using OECD PSE data and WTO notifications.

**Table 4-4—Reduction commitments required to put commodity-specific AMS at 30 percent or less of value of production**

|                                     | Wheat | Rice | Coarse grains | Oilseeds | Sugar |
|-------------------------------------|-------|------|---------------|----------|-------|
| <i>Percent change from 1998 AMS</i> |       |      |               |          |       |
| Australia                           | 0     | 0    | 0             | 0        | 0     |
| Canada                              | 0     | 0    | 0             | 0        | 0     |
| European Union                      | 0     | 0    | 0             | 0        | -28   |
| Japan                               | -65   | -64  | -56           | -17      | -51   |
| Korea                               | 0     | -57  | -57           | -61      | 0     |
| Mexico                              | 0     | 0    | 0             | 0        | -9    |
| Norway                              | -37   | 0    | -31           | 0        | 0     |
| New Zealand                         | 0     | 0    | 0             | 0        | 0     |
| Poland                              | 0     | 0    | 0             | 0        | 0     |
| Switzerland                         | -35   | 0    | -36           | -52      | -47   |
| United States                       | 0     | 0    | 0             | 0        | -19   |

|                                     | Dairy products | Beef & sheep | Other meat | Wool | Fruits & vegetables | Miscellaneous |
|-------------------------------------|----------------|--------------|------------|------|---------------------|---------------|
| <i>Percent change from 1998 AMS</i> |                |              |            |      |                     |               |
| Australia                           | 0              | 0            | 0          | 0    | 0                   | 0             |
| Canada                              | -48            | 0            | 0          | 0    | 0                   | 0             |
| European Union                      | -44            | -15          | 0          | 0    | -16                 | 0             |
| Japan                               | -62            | -6           | -11        | 0    | 0                   | 0             |
| Korea                               | 0              | -27          | 0          | 0    | 0                   | 0             |
| Mexico                              | 0              | 0            | 0          | 0    | 0                   | 0             |
| Norway                              | -10            | 0            | -20        | 0    | 0                   | 0             |
| New Zealand                         | 0              | 0            | 0          | 0    | 0                   | 0             |
| Poland                              | 0              | 0            | 0          | 0    | 0                   | 0             |
| Switzerland                         | -43            | -36          | -40        | 0    | 0                   | -40           |
| United States                       | -49            | 0            | 0          | 0    | 0                   | 0             |

Source: ERS estimates using WTO notifications and OECD PSE data.

on “favored” commodities, such as dairy and rice. Likewise, if commodity-level support were constrained to 30 percent of the value of production (scenario 2), countries might elect to increase support for those commodities currently under the 30-percent ceiling. Clearly, it is not possible to predict which areas of support might increase.

Finally, unless otherwise constrained by a new WTO agreement, countries might substitute other policies such as tariffs or nontariff barriers (labeling requirements, phytosanitary constraints, etc.) for AMS domestic support. As a result, the trade adjustments presented in this paper should be viewed as indicative of the pressures for market adjustments that might occur if domestic support were further constrained. Rather than allowing trade adjustments, countries may respond to these market pressures by adjusting the mix of policy support provided to their farmers.

### Leveling of Support Produces Larger Trade Impacts

The analysis indicates that world trade expands more when support is leveled across commodities than when ceilings on overall support are lowered. World agricultural trade expands by 0.3 percent under the ceiling-reduction scenario, while under the support-leveling case it increases by 1.2 percent.

U.S. agricultural exports increase 1.3 percent when AMS ceilings are lowered, and rise 1.7 percent when commodity support is leveled (table 4-5). In the ceiling-reduction scenario, U.S. export growth is mostly to the EU, with an annual increase of \$440 million (table 4-6). In the leveling scenario, most U.S. export growth is to Japan, with an annual increase of \$500 million (table 4-7). U.S. imports decline negligibly when ceilings are reduced and increase by 0.5 percent in the support-leveling scenario.

**Table 4-5—Changes in U.S and world agricultural trade resulting from reductions in support**

|              | Scenario: Ceiling reduction<br>Change from base |         | Scenario: Support-leveling<br>Change from base |         |
|--------------|---|---------|--|---------|
|              | US\$ million                                    | Percent | US\$ million                                   | Percent |
| U.S. exports | 904   | 1.3     | 1,045  | 1.7     |
| U.S. imports | -19   | 0.0     | 244  | 0.5     |
| World trade  | 1,402   | 0.3     | 5,422  | 1.2     |

See tables 13 and 14, page 18, for breakdown by country.  
Source: ERS estimates.

**Table 4-6—Changes in U.S. agricultural trade from a 20-percent reduction in URAA AMS ceilings**

|   | Exports |        |       |      |       |       |                 | Total exports | Total imports |
|---|---------|--------|-------|------|-------|-------|-----------------|---------------|---------------|
|   | Canada  | Mexico | EU    | EFTA | Japan | Korea | Other countries |               |               |
| <i>Change from base in US\$ million</i> |         |        |       |      |       |       |                 |               |               |
| Rice                                    | 0.0     | -0.1   | 6.1   | 0.1  | 17.0  | 0.0   | 0.7             | 23.9          | -0.2          |
| Wheat                                   | 0.1     | 1.6    | 55.8  | 3.1  | 15.0  | 1.6   | 63.2            | 140.5         | -1.1          |
| Coarse grains                           | 1.0     | -1.4   | 87.4  | 3.2  | -6.7  | -1.1  | 53.6            | 136.0         | -13.9         |
| Oilseeds                                | 1.3     | 8.8    | 190.1 | 0.7  | 9.4   | 4.1   | 8.1             | 222.4         | -0.2          |
| Sugar                                   | 0.0     | 0.0    | 1.0   | 0.0  | 0.2   | 0.0   | 0.1             | 1.3           | -0.4          |
| Cotton and fiber                        | 0.1     | -0.1   | 0.1   | 0.0  | 0.6   | 0.4   | 0.7             | 1.8           | 0.0           |
| Fruit and vegetables                    | 0.0     | -0.8   | 18.4  | 2.1  | 40.2  | 8.9   | -3.8            | 65.1          | 7.8           |
| Other crops                             | -0.8    | -0.5   | -12.6 | 0.4  | 3.6   | 3.4   | -5.6            | -12.1         | 11.3          |
| Beef                                    | 2.0     | -0.3   | 52.8  | 1.0  | 50.6  | 9.8   | 10.2            | 126.0         | -13.4         |
| Other livestock                         | 5.2     | 0.9    | 17.0  | 1.4  | 37.8  | 14.3  | 68.4            | 145.0         | -0.5          |
| Dairy products                          | 1.2     | 4.1    | 7.0   | 1.0  | 20.7  | 5.7   | 10.8            | 50.5          | -0.6          |
| Processed foods                         | 3.1     | 1.5    | 16.6  | 0.0  | -27.8 | -2.7  | 12.6            | 3.3           | -7.6          |
| Total                                   | 13.3    | 13.8   | 439.6 | 13.0 | 160.5 | 44.3  | 219.0           | 903.5         | -18.7         |

Source: ERS estimates.

**Table 4-7—Changes in U.S. agricultural trade from reducing commodity-specific AMS to 30 percent or less of the value of production**

|   | Exports |        |       |      |       |       |                 | Total exports | Total imports |
|---|---------|--------|-------|------|-------|-------|-----------------|---------------|---------------|
|   | Canada  | Mexico | EU    | EFTA | Japan | Korea | Other countries |               |               |
| <i>Change from base in US\$ million</i> |         |        |       |      |       |       |                 |               |               |
| Rice                                    | -0.3    | -0.4   | -1.7  | 0.6  | 265.4 | 0.3   | -0.9            | 263.0         | 1.6           |
| Wheat                                   | 0.1     | -0.7   | -5.7  | 9.2  | 87.9  | 1.4   | 41.7            | 134.0         | 3.7           |
| Coarse grains                           | 1.6     | -0.4   | -11.0 | 8.9  | -18.5 | -0.4  | 83.0            | 63.4          | -25.4         |
| Oilseeds                                | -0.1    | -1.6   | -19.1 | 4.2  | 29.7  | 21.3  | 7.3             | 41.6          | 0.0           |
| Sugar                                   | 0.7     | 0.3    | 0.4   | 0.0  | 1.2   | 0.0   | 2.1             | 4.9           | 111.3         |
| Fiber                                   | 0.4     | 0.2    | 1.1   | 0.1  | 2.5   | 1.6   | 10.0            | 15.9          | -0.1          |
| Fruit and vegetables                    | 0.9     | -0.3   | 75.0  | 5.0  | -14.3 | 0.1   | 8.8             | 75.4          | -2.1          |
| Other crops                             | -0.2    | -0.3   | -15.4 | -0.5 | -2.4  | -0.4  | -1.5            | -20.8         | 3.7           |
| Beef                                    | 10.4    | 3.2    | 216.2 | 5.5  | -4.4  | 23.7  | 31.5            | 286.2         | -39.0         |
| Other livestock                         | 0.6     | 0.9    | -2.0  | 1.1  | 9.5   | 4.9   | 8.4             | 23.5          | -1.6          |
| Dairy products                          | 58.6    | -21.4  | 40.0  | 2.2  | 164.6 | -2.6  | -44.4           | 197.0         | 173.8         |
| Processed foods                         | -1.3    | 0.7    | -19.0 | -0.6 | -19.7 | -3.9  | 4.4             | -39.5         | 18.1          |
| Total                                   | 71.4    | -19.6  | 259.0 | 35.9 | 501.4 | 45.9  | 150.5           | 1,044.5       | 244.0         |

Source: ERS estimates.

Trade impacts in the support-leveling scenario are somewhat larger for two reasons. Limiting support for individual commodities reduces large market distortions for the most heavily protected commodities. For example, in the ceiling-reduction scenario, Japan lowers its agricultural support by 10 percent for all supported commodities including rice, while in the leveling scenario rice support must shrink by 64 percent to reach 30 percent of the value of production. Second, since countries can no longer focus support on “favored” commodities, more countries are drawn into the reform process in the leveling scenario, including NAFTA countries, which increases bilateral trade opportunities.

Over 80 percent of the global trade effects for both scenarios result from reducing the market price support and related import barriers and export subsidies. Most amber box domestic farm support is provided through market price support programs, and most price support programs are implemented through trade restraints and export subsidies rather than government commodity stock holding. This suggests that only negotiating tariff reductions would create significant pressures for reductions in related domestic support programs. The use of market price support compared with other types of domestic support varies by commodity. Dairy support in OECD countries relies heavily on border measures in order to transfer income to producers. Wheat and coarse grains in these countries rely more heavily on direct payments to producers.

### **U.S. Exports Gain in Both Scenarios**

The two approaches have the potential to affect world commodity markets differently. As a large diversified sector, U.S. agriculture benefits from both approaches. While the value of total U.S. export gains is similar under both scenarios, commodity impacts differ (tables 4-6 and 4-7). The export gains illustrate the directions and relative magnitudes of the pressures that are likely to result from policy reform.

Under the ceiling-reduction scenario, changes in U.S. exports are concentrated in bulk grains and oilseeds destined for the European Union (almost \$300 million). The analysis assumes that the EU cuts amber box domestic support for all commodities included in the AMS by 7 percent. These cuts lead to decreased EU domestic production and exports, which has the direct effect of increasing U.S. exports to the EU and

the indirect effect of increasing U.S. sales to EU markets.

Under the support-leveling scenario, the largest U.S. impacts are on rice exports to Japan. In this case, Japan cuts domestic support for rice by 64 percent. This leads to a potential annual increase in total U.S. rice exports of almost 30 percent, a significant increase for U.S. rice exports, since Japan imports mostly japonica rice grown almost exclusively in California. In order to expand U.S. exports of rice to Japan by 30 percent, japonica acreage in California would need to remain at near-record levels, while part of current exports to the Middle East and domestic processing use would need to be diverted to the higher priced Japanese market. U.S. dairy exports also increase by about 30 percent in this scenario, with Japan being the leading market.

Under both scenarios, annual U.S. exports of meat (beef, pork, and poultry) increase by about 4 percent (about \$300 million). In the ceiling-reduction scenario, all types of meat exports increase. In the support-leveling scenario, most of the meat export growth occurs in beef exports to the EU. This analysis does not account for nontariff barriers such as the beef hormone ban, which could limit potential U.S. export growth.

U.S. wheat exports increase about 3 percent (about \$140 million) in both scenarios. When the aggregate ceiling is reduced, EU cuts in domestic support for wheat lead to a decrease in its wheat exports. This creates an opportunity for U.S. wheat exports to expand and to capture a larger share of the world wheat market. However, when support is leveled, EU domestic support for wheat is assumed not to be reduced, and wheat imports from the United States are nearly unchanged. Instead, U.S. wheat exports to Japan expand, as Japan is required to cut support to all grains by about 60 percent.

U.S. fruit and vegetable exports increase by about \$70 million in both scenarios. The increase in fruit and vegetable exports are mainly to the EU and Japan when ceilings are reduced and mainly to the EU when support is leveled. The EU reports an administered price program to the WTO for fruit and vegetable products. This support is assumed to be cut by 7 percent in the ceiling-reduction scenario and by 16 percent in the support-leveling scenario, which creates export opportunities for U.S. products. U.S. fruit and



vegetable exports to Japan decline in the second scenario, because the cut in Japan's support to grains and oilseeds is large enough to free up land for increased domestic production of fruit and vegetable products, thereby reducing imports.

Adjustments in world dairy trade under the two scenarios reflect two characteristics of this complex sector. First, dairy is one of the most highly supported sectors in world agriculture. Second, dairy trade is a multiproduct sector with highly differentiated products — cheese, for example. Consequently, many countries, including the United States, import some dairy products while exporting other products. With this two-way trade, reductions in foreign and domestic support can lead to simultaneous growth in exports and imports.

Liberalization can have positive benefits for U.S. dairy. In the ceiling-reduction scenario, the U.S. is not required to reduce any domestic support, including dairy, while the EU, Norway, Switzerland, and Japan cut dairy support. As a result, U.S. exports expand somewhat while imports are almost unchanged (table 4-6).

In the support-leveling scenario, U.S. dairy support is cut by 49 percent. In comparison, Japan reduces domestic support by 62 percent, Canada by 48 percent, and the EU by 44 percent. Reductions in world dairy support help expand U.S. annual dairy product net exports.

Japan is a key market for world dairy trade. Japanese dairy imports from all sources increase by about \$1 billion when support is leveled. Though not a major supplier, the U.S. is currently a supplier of frozen dairy products to Japan. In the support-leveling scenario, Japan represents the most important market for increased U.S. dairy exports. Canada is another potential destination for U.S. dairy exports with the reduction in support levels.

### **Domestic Support Reforms Could Have Spillover Effects**

The two scenarios analyzed here have direct impacts on commodities that receive amber box support. Spillover impacts in related sectors may also occur if the policy reforms affect input costs or if they free up labor and capital for use in other sectors.

While no policy changes are assumed for processed agricultural products, these products are likely to be significantly affected by AMS policy reforms.

Processed agricultural products include a wide range of oilseed products as well as processed foods and beverages. The main spillover effects are changes in input costs (raw agricultural products) as countries reduce domestic support.

Prices of raw agricultural products are expected to decline in countries that relied on market price support, permitting countries to expand production of processed agricultural products. As a result the EU, European Free Trade Association (Iceland, Norway, Switzerland, and Liechtenstein), and Japan can expand exports of processed products, and the EU, Japan, and Korea reduce their imports of processed products. Japan in particular increases exports of processed products by \$280 million while decreasing imports of processed products by nearly \$700 million. These changes in Japan's processed product trade illustrate the potential problem of tariff escalation.<sup>6</sup> If processed foods are protected by a high tariff, lowering trade barriers (market price support) for raw materials can increase the effective rate of protection for processed foods.

### **Other Direct and Indirect Impacts of Reform**

A small number of countries have WTO domestic support reduction commitments. Of these countries, the EU, Japan, and the United States account for over 80 percent of all WTO domestic support ceilings. Most of the growth in U.S. trade resulting from the two scenarios occurs among countries assumed to reduce domestic support. Increased U.S. exports to two countries — the EU and Japan — account for about 70 percent of U.S. export gains under both scenarios.

In addition to the direct benefits of policy reform affecting U.S. exports to the EU and Japan, indirect benefits to U.S. exports result from reduced competition in third markets. Changes in world wheat trade illustrate these impacts. The EU relies heavily on non-OECD markets as a destination. Reductions of 7 percent in the EU's amber box support under the ceiling-

<sup>6</sup> Tariff escalation refers to the situation where tariffs are zero or low on primary (unprocessed) products, then increase, or escalate, as the product undergoes additional processing. Tariff escalation can result in a significant bias against trade of the processed product.

reduction scenario lowers all forms of EU support, including domestic subsidies and administered price-related export subsidies for wheat. As a result, EU wheat exports to non-OECD countries decline by \$300 million, leaving a gap for other suppliers to fill. The United States, Canada, and Australia increase wheat exports, filling about one-third of the gap, leaving production and trade by non-OECD countries to fill the remainder.

### Summary and Conclusions

Two generic scenarios were selected for this study. In one case the overall AMS ceiling is reduced to 60 percent of the historical base, while the alternative requires a leveling of support by commodity to levels that do not exceed 30 percent of the 1998 value of production. The ceiling-reduction scenario permits countries to maintain maximum flexibility to protect individual commodities. The support-leveling scenario constrains high levels of support among countries and across commodities.

The results show that the aggregate impacts for the United States are similar under both scenarios. In the

ceiling-reduction scenario, export gains are largest for wheat, feed grains, oilseeds, and meats. In the support-leveling scenario, export gains are largest for rice, meats, dairy, and wheat.

The market adjustments presented in this paper should be viewed as indicative of the types of adjustments that might occur if domestic support were further constrained as a result of WTO negotiations. The discussion assumes that only domestic support is disciplined and that countries do not alter the mix of domestic policies that they provide to meet the new policy constraints.

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