U.S. Ag Trade & Midwest Agriculture

Federal Reserve Bank of Chicago:
Midwest Agriculture’s Ties to the Global Economy
How will the Midwest economy and agriculture adjust to changing trade patterns?

Steve Elmore
Chief Economist
Agriculture Division of DowDuPont

November 28th, 2017
This presentation contains forward-looking statements based on expectations, estimates and projections that are not guarantees of future performance and involve a number of uncertainties and assumptions.

The content is provided “AS IS,” “AS AVAILABLE.” Pioneer Hi-Bred International, Inc. does not warrant the accuracy or completeness of the information, text, graphics, links, or other items contained in this communication, and Pioneer Hi-Bred International, Inc. expressly disclaims liability for errors or omissions in these materials. We reserve the right to make changes and corrections at any time, without notice.

Pioneer Hi-Bred International, Inc. expressly disclaims all liability for the use or interpretation by others of information contained in this Pioneer Hi-Bred International, Inc. communication. Decisions based on information contained in the Pioneer Hi-Bred International, Inc. communication are the sole responsibility of the reader, and in exchange for using the Pioneer Hi-Bred International, Inc. communication the reader agrees to hold Pioneer Hi-Bred International, Inc. harmless against any claims for damages arising from any decisions that the reader makes based on such information. Nothing contained in this Pioneer Hi-Bred International, Inc. communication constitutes investment advice.
The growth in exports on the recent agricultural boom is sometimes lost because of the growth due to biofuels. The RFS1 in 2005 with the big boost with the RFS2 in 2007 propelled ethanol and biodiesel production growth. Even though farm receipts were going up with the new domestic uses, the exports were a growing percent of receipts.
## U.S. Ag Trade is Very Important

### Top Commodity Imports, 2007-2016

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Billion $</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee</td>
<td>56.8</td>
<td>6.0%</td>
</tr>
<tr>
<td>Wine</td>
<td>49.4</td>
<td>5.2%</td>
</tr>
<tr>
<td>Cocoa and Products</td>
<td>41.3</td>
<td>4.3%</td>
</tr>
<tr>
<td>Malt Beverages</td>
<td>38.7</td>
<td>4.1%</td>
</tr>
<tr>
<td>Beef &amp; Veal</td>
<td>36.5</td>
<td>3.8%</td>
</tr>
<tr>
<td>Misc Hort Products</td>
<td>29.2</td>
<td>3.1%</td>
</tr>
<tr>
<td>Biscuits &amp; Wafers</td>
<td>28.2</td>
<td>3.0%</td>
</tr>
<tr>
<td>Other Beverages</td>
<td>24.9</td>
<td>2.6%</td>
</tr>
<tr>
<td>Other Grains</td>
<td>24.8</td>
<td>2.6%</td>
</tr>
<tr>
<td>Rubber / Gums</td>
<td>24.5</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

### Top Commodity Exports, 2007-2016

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Billion $</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soybeans</td>
<td>190.0</td>
<td>15.1%</td>
</tr>
<tr>
<td>Corn</td>
<td>99.9</td>
<td>7.9%</td>
</tr>
<tr>
<td>Wheat</td>
<td>80.2</td>
<td>6.4%</td>
</tr>
<tr>
<td>Other Feeds &amp; Fodder</td>
<td>57.0</td>
<td>4.5%</td>
</tr>
<tr>
<td>Cotton</td>
<td>50.9</td>
<td>4.0%</td>
</tr>
<tr>
<td>Misc Hort Products</td>
<td>45.2</td>
<td>3.6%</td>
</tr>
<tr>
<td>Beef &amp; Veal</td>
<td>41.4</td>
<td>3.3%</td>
</tr>
<tr>
<td>Soybean Meal</td>
<td>40.1</td>
<td>3.2%</td>
</tr>
<tr>
<td>Pork</td>
<td>40.1</td>
<td>3.2%</td>
</tr>
<tr>
<td>Chicken</td>
<td>32.7</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

### Comments

Most of the export commodities are important to Midwest agriculture.
# U.S. Ag Trade is Very Important

## Top Import Sources, 2007-2016

<table>
<thead>
<tr>
<th>Country</th>
<th>Billion $</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>191.7</td>
<td>20.1%</td>
</tr>
<tr>
<td>European Union</td>
<td>168.5</td>
<td>17.7%</td>
</tr>
<tr>
<td>Mexico</td>
<td>159.2</td>
<td>16.7%</td>
</tr>
<tr>
<td>China</td>
<td>38.5</td>
<td>4.0%</td>
</tr>
<tr>
<td>Brazil</td>
<td>32.2</td>
<td>3.4%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>29.1</td>
<td>3.1%</td>
</tr>
<tr>
<td>Australia</td>
<td>28.8</td>
<td>3.0%</td>
</tr>
<tr>
<td>India</td>
<td>25.1</td>
<td>2.6%</td>
</tr>
<tr>
<td>Chile</td>
<td>24.8</td>
<td>2.6%</td>
</tr>
<tr>
<td>New Zealand</td>
<td>21.3</td>
<td>2.2%</td>
</tr>
</tbody>
</table>

## Top Export Destinations, 2007-2016

<table>
<thead>
<tr>
<th>Country</th>
<th>Billion $</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>187.3</td>
<td>14.9%</td>
</tr>
<tr>
<td>Canada</td>
<td>187.2</td>
<td>14.9%</td>
</tr>
<tr>
<td>Mexico</td>
<td>166.0</td>
<td>13.2%</td>
</tr>
<tr>
<td>Japan</td>
<td>121.4</td>
<td>9.6%</td>
</tr>
<tr>
<td>Brazil</td>
<td>103.1</td>
<td>8.2%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>55.7</td>
<td>4.4%</td>
</tr>
<tr>
<td>Australia</td>
<td>32.5</td>
<td>2.6%</td>
</tr>
<tr>
<td>India</td>
<td>32.2</td>
<td>2.4%</td>
</tr>
<tr>
<td>New Zealand</td>
<td>23.7</td>
<td>1.9%</td>
</tr>
<tr>
<td>Philippines</td>
<td>20.4</td>
<td>1.6%</td>
</tr>
</tbody>
</table>

*Note the importance of NAFTA partners, as well as China/Other Asia and Europe.*
Global Ending Stocks

Comments

Farmers did not cut back area and stocks did not decline significantly in 2017/18.

Data Source: USDA
Five Consecutive Years of Above Trend Grains & Oilseed Yields is a Historic Event

Composite Yield Variability for Global Grain & Oilseeds

Note: Global yields per hectare for an aggregate of 9 grains (corn, wheat, rice, sorghum, barley, oats, rye, millet and mixed grains) and 5 oilseeds (soybeans, rapeseed, sunflower seed, peanuts and cottonseed). The price index is a simple average rice, wheat, corn and soybean price indices, 1990-2005 (Pre-Biofuels) =1.00

Five consecutive years of above trend yields (gold markers) that are pressuring commodity prices. The three consecutive years at/below trend helped prices establish record or peak levels.

Comments

Agriculture Division of DowDuPont
U.S. Exports of Grains & Oilseeds

The U.S. has been able to hold the level of exports of grains within a range. Weather in the U.S. that causes less production (i.e. 2012) led to a drop in exports to the world.

U.S. soybeans continues to go up as China keeps increasing imports.

Note: Grains: corn, wheat, rice, sorghum, barley, oats, rye, millet and mixed grains & Oilseeds: soybeans, rapeseed, sunflower seed, peanuts and cottonseed.

Data Source: USDA
The U.S. has not been able to keep global market share from eroding due to increased global production, improving agricultural infrastructure by competitors in the global marketplace and exchange rates.

Note: Grains: corn, wheat, rice, sorghum, barley, oats, rye, millet and mixed grains & Oilseeds: soybeans, rapeseed, sunflower seed, peanuts and cottonseed.

Data Source: USDA
China Remains the Key Driver in Global Soybeans

The global soybean market is the key example of the impact that a developing major export/import relationship can have on agriculture.

China made the decision in the early 1990s to import its soy needs, and has been able to grow this demand. Western hemisphere producers have been able to meet this demand, and it has been beneficial for both parties over time.
Domestic use has grown significantly in the last 20 years. Much of this demand (ethanol, pork, poultry, dairy) is now demand that takes corn every single day. This demand reliability has helped some of the seasonal market variability. This is in addition to the market dampening effect that large supplies have had on market prices.

Note: Internal calculations based on feed rations & USDA historical data. This is first use for illustration and the per day calculation based on a 6 day work week. Average over time period.
Exports are critical to U.S. agriculture – Corn, soybeans, wheat, beef, pork, poultry, ethanol and DDG all have a significant % of total production to export and this is critical to the price outlook for all commodities.
Exports are critical to U.S. agriculture. Bulk products do get exported but so do the products of domestic use.

These are the annual average exports as a percent of domestic production.
Summary

- Global and U.S. planted area sustained at higher levels longer than was the case in previous price downturns. Global supplies will be slow to decline without a serious weather issue in a major producing region. Export competition will remain.

- Domestic use has grown significantly in the last 20 years. Much of this demand (ethanol, pork, poultry, dairy) is now demand that takes corn every single day. This demand reliability has helped some of the seasonal market variability. This is in addition to the market dampening effect that large supplies have had on market prices. This demand growth is steady and firm, but slow. It has been much slower than domestic production growth.

  - Agriculture infrastructure touches many areas (roads/trucks, rail, water system, grain storage, meat production and processing). Some of this infrastructure has grown along with production (storage, processing) but on other parts of the infrastructure system (roads, river system, ports) we are simply pushing more volume through.

  - It is critical for the U.S. to invest in updating and increasing our infrastructure system. Other countries are doing this and are gaining market share from these investments.

- Exports will be vital and more critical for Farmers and the Agricultural Sector going forward.
THANK YOU