Update on Iowa Farmland Market and China Ag Economy

Wendong Zhang
Assistant Professor of Economics and Extension Economist
wdzhang@iastate.edu
515-294-2536
Farmland Owners Workshop, Altoona, Iowa
Feb 16, 2018
A Quick Introduction: Dr. Wendong Zhang

– Grown up in a rural county in NE China
– Attended college in Shanghai and Hong Kong
– Ph.D. in Ag Econ in 2015 from Ohio State
– 2012 summer intern at USDA-ERS on farm economy and farmland values
– Research and extension interests:
  land value/ownership [www.card.iastate.edu/farmland/]
  agriculture and the environment

China Ag center [www.card.iastate.edu/china]
A corny tale

China imports a farm from Iowa

A slice of the Midwest outside Beijing

**Presentations**


Publications


China enters "New Era"

- Chinese Dream
- Belt and Road Initiative
- Xi Jinping 2030?
- COE of China
China’s Provinces

My Hometown
Mainland China vs. US
My hometown: Shenxian, Shandong Province

Greenhouse – plastic film - Shandong Province
## China vs. US

<table>
<thead>
<tr>
<th>Category</th>
<th>China</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>1350.4 million</td>
<td>318.9 million</td>
</tr>
<tr>
<td>Gross agricultural production</td>
<td>555.2 billion $</td>
<td>232.4 billion $</td>
</tr>
<tr>
<td>Share of Agriculture in Total GDP</td>
<td>10.0%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Share of Agriculture in Employment</td>
<td>35.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Number of Farmers</td>
<td>241.7 million</td>
<td>3.2 million</td>
</tr>
<tr>
<td>Number of Farms</td>
<td>200.2 million</td>
<td>2.1 million</td>
</tr>
<tr>
<td>Total Farmland Area</td>
<td>406.8 million acres</td>
<td>914.5 million acres</td>
</tr>
<tr>
<td>Corn Production Area</td>
<td>89.7 million acres</td>
<td>87.4 million acres</td>
</tr>
<tr>
<td>Soybean Production Area</td>
<td>16.9 million acres</td>
<td>76.3 million acres</td>
</tr>
<tr>
<td>Wheat Production Area</td>
<td>59.6 million acres</td>
<td>45.3 million acres</td>
</tr>
<tr>
<td>Total Size of Vegetable/Herb Greenhouses</td>
<td>83.6 million sq.ft.</td>
<td>61.8 million sq.ft.</td>
</tr>
<tr>
<td>Average Farm Size</td>
<td>2.0 acres</td>
<td>433.6 acres</td>
</tr>
</tbody>
</table>
Chinese land is owned by collectives (Contract Right Certificate)

Total land size
Number of parcels

Family Rep.
30-year term
With at least one 30-year renewal
All family members

China’s New Rural Land Transfer Reform

2016: 77 million acres (35% of cropland) transferred; 2007: 5%

Among them: 30% to co-ops or corps; 80% non-grain production
Future of High-Speed Rail in China
China’s demographics – large is beautiful

1.39 bn
Population
54% urban

453 mn
Households

415 mn
Millennials
(30% of population)

217 mn
Gen Z
(18% of population)

1005 mn
Working age population

79 mn
College graduates

1042 mn
Smartphone subscribers

US$ 606 bn
Online retail market size

Note: Millennials are those born in the 1980s & 1990s, Gen Z: born after 2000s
Source: BBVA Research, China National Bureau of Statistics

IOWA STATE UNIVERSITY
Extension and Outreach

Center for Agricultural and Rural Development
Most Chinese people are still much poorer than the average American.

China’s GDP will overtake the U.S. level in 2028 at these projected average growth rates:

- **U.S.** 2.0%
- **China** 6.5%

1992
- **GDP per capita (PPP)**
  - $37,283
  - **United States**
  - $1,846
  - **China**

U.S. GDP per capita was 20.2 times that of China.

2004
- **Urbanized population**
  - 79.8%
  - **United States**

2016
- **Urbanized population**
  - 81.8%
  - **United States**

Even on a purchasing power parity basis, a Chinese person still has a difficult time buying comparable goods and services, compared to what a U.S.—79.8% urbanized person can purchase at the same price.

Urbanization in China was lower than that of the U.S. in 1910.

Urbanization in China was lower than that of the U.S. in 1950.

**2016 GDP per capita (PPP)**
- **United States**: $53,417
- **China**: $14,275

U.S. GDP per capita was 3.7 times that of China.
China’s 2016 provincial GDP per capita as % of Iowa
2016 Area planted (Yield, Bu/acre):
US: 88 mil. acres (154)
Iowa: 14 mil. acres (188)
China: 91 mil. acres (88)

2016 Area planted (Yield, Bu/acre):
US: 90 mil. acres (48)
Iowa: 10 mil. acres (56)
China: 16 mil. acres (26)
China Pork

2016 Production
US: 26 Bil. lbs
Iowa: 1.2 Bil. lbs
China: 15 Bil. lbs

China Beef

2016 Production
US: 25 Bil. lbs
Iowa: 9 Bil. lbs
China: 117 Bil. lbs
China Corn Yield

2015 Soybean Yield

US: 48 Bu/acre
Iowa: 56 Bu/acre
China: 26 Bu/acre

China Soybean Yield

Corn Yield (Iowa=100%)
- No data
- 11% - 40%
- 41% - 45%
- 46% - 50%
- 51% - 60%

IOWA STATE UNIVERSITY
Extension and Outreach
China

$21.4 billion U.S. Agricultural Exports, 2016

Top 5 U.S. Exports
1. Soybeans ($14.2 billion)
2. Course Grains* ($1.0 billion)
3. Hides & Skins ($949 million)
4. Pork ($578 million)
5. Cotton ($550 million)

*Excluding Corn

Export Growth
2006-2016
$6.7 billion

219% Increase

$21.4 billion

#1
Among U.S. Agricultural Export Markets, 2016

Source: FAS Global Agricultural Trade System (GATS) BICO HS-6
Share of U.S. Agriculture Exported in 2016

Share of China in US Ag Exports

- 50% Wheat
- >50% Rice
- >50% Sorghum
- >20% Cherries
- >30% Grapes
- 15% Apples
- >70% Cotton
- >70% Tree Nuts
- 50% Soybeans
- 20% Pork
- 15% Dairy
- 15% Poultry
- 10% Beef
- 0% Corn

More than 20% of total U.S. agricultural production is exported annually.

Twitter: @USDAForeignAg  Website: www.fas.usda.gov
Source: USDA-FAS Global Agricultural Trade System (GATS)

United States Department of Agriculture
Foreign Agricultural Service
## China’s Top Ag Imports Sources

<table>
<thead>
<tr>
<th>Commodity (2016 value of China ag imports)</th>
<th>USA</th>
<th>Brazil</th>
<th>Europe</th>
<th>Australia</th>
<th>Argentina or Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soybean ($34.4 Bil.)</td>
<td>38%</td>
<td>47%</td>
<td></td>
<td></td>
<td>A-10%</td>
</tr>
<tr>
<td>Pork ($2.32 Bil.)</td>
<td>13%</td>
<td></td>
<td>50%</td>
<td>Canada:</td>
<td>11%</td>
</tr>
<tr>
<td>Ethanol ($0.38 Bil.)</td>
<td>70%</td>
<td>11%</td>
<td></td>
<td>Pakistan:</td>
<td>15%</td>
</tr>
<tr>
<td>Beef ($2.42 Bil.)</td>
<td>0%</td>
<td>22%</td>
<td>28%</td>
<td>U-21%</td>
<td></td>
</tr>
<tr>
<td>Poultry ($1.11 Bil.)</td>
<td></td>
<td>79%</td>
<td></td>
<td></td>
<td>A-9%</td>
</tr>
<tr>
<td>Corn ($0.87 Bil.)</td>
<td>10%</td>
<td></td>
<td></td>
<td>Ukraine:</td>
<td>79%</td>
</tr>
</tbody>
</table>
Ibs per capita Meat Consumption by Country 2016

Source: OECD
China aims to build a global infrastructure network
“Belt and Road” infrastructure projects, planned and completed (March 2017)

Projects subsumed under „Belt and Road“ by the Chinese authorities:
Why Care About Farmland Market?

Note: F = forecast; data for 2016 and 2017 are forecasts. The GDP chain-type price index is used to convert the nominal (current-dollar) statistics to real (inflation adjusted) amounts (2009=100).


Data as of February 7, 2017.
Guiding Framework

Land Value = \frac{\text{localized net income}}{\text{universal interest rate}}
Market Value of Land – Capitalization Formula

\[ PV = \sum_{t=0}^{n} \frac{R}{(1+i)^t} \]

- For simplicity, you could think of land value as the present value of all future annual land rental payments a landowner could charge
- \( PV = \frac{R}{i} \)
AVERAGE Iowa Land Values

all farmland 1941–2017

$7,326

As of Nov 17

+2.0%

Nominal land values

Inflation adjusted land values


IOWA STATE UNIVERSITY
Extension and Outreach

CARD
Center for Agricultural and Rural Development
The “temporary break” in continued declines results from **limited land supply**.

Sale Activity Index = % Reported More Sales - % Reported Less Sales + 100
Percent change in dollar value of “good” farmland

Top: July 1, 2017 to October 1, 2017
Bottom: October 1, 2016 to October 1, 2017

<table>
<thead>
<tr>
<th></th>
<th>July 1, 2017 to October 1, 2017</th>
<th>October 1, 2016 to October 1, 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illinois</td>
<td>-1</td>
<td>-3</td>
</tr>
<tr>
<td>Indiana</td>
<td>+1</td>
<td>-4</td>
</tr>
<tr>
<td>Iowa</td>
<td>0</td>
<td>+2</td>
</tr>
<tr>
<td>Michigan</td>
<td>-1</td>
<td>+2</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>0</td>
<td>-1</td>
</tr>
<tr>
<td>Seventh District</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

0.9% REALTORS® Land Institute - Iowa Chapter
September 1, 2017
September 2016 – September 2017

3.2% 1.9% 5.1% -0.5% 0.8% 2.6% 3.1% 5.7%
-2.0% 1.1% -0.9% 2.7% 3.4% 1.1% 3.6% 4.7%
-3.0% 2.6% -0.5% 1.3% 1.3% 1.3% 1.3% 1.3%
-0.4% 1.8% 2.6%
USDA NASS June Area Survey
November 2016 to November 2017

Ag Real Estate Values: + 2.3%
Cropland Values: No change
Pasture Values: +1.5%
However, don’t rush to conclude a turn of the farmland market.

<table>
<thead>
<tr>
<th></th>
<th>Nonirrigated</th>
<th>Irrigated</th>
<th>Ranchland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kansas</td>
<td>-7</td>
<td>-8</td>
<td>-5</td>
</tr>
<tr>
<td>Western Missouri</td>
<td>-1</td>
<td>n/a **</td>
<td>0</td>
</tr>
<tr>
<td>Mountain States***</td>
<td>-3</td>
<td>-11</td>
<td>1</td>
</tr>
<tr>
<td>Nebraska</td>
<td>-8</td>
<td>-7</td>
<td>-8</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>-3</td>
<td>-4</td>
<td>-2</td>
</tr>
<tr>
<td>Tenth District</td>
<td>-5</td>
<td>-7</td>
<td>-4</td>
</tr>
</tbody>
</table>

---

* Percent changes are calculated using responses only from those banks reporting in both the past and the current quarters.
** Not reported due to small sample size.
*** Mountain States include Colorado, northern New Mexico and Wyoming, which are grouped because of limited survey responses from each state.
% Change in Inflation-adjusted Iowa Farmland Values 1942-2017 (decrease 0.2%)
Indiana and Illinois both show declines

<table>
<thead>
<tr>
<th></th>
<th>6/16-6/17 %</th>
<th>6/16-12/16 %</th>
<th>12/16-6/17 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>0.2%</td>
<td>2.9%</td>
<td>-2.6%</td>
</tr>
<tr>
<td>Average</td>
<td>-1.6%</td>
<td>1.4%</td>
<td>-3.0%</td>
</tr>
<tr>
<td>Poor</td>
<td>-1.4%</td>
<td>1.9%</td>
<td>-3.2%</td>
</tr>
<tr>
<td>Transition</td>
<td>5.2%</td>
<td>13.4%</td>
<td>-7.2%</td>
</tr>
<tr>
<td>Recreation</td>
<td>8.5%</td>
<td>11.8%</td>
<td>-2.9%</td>
</tr>
</tbody>
</table>

**INDIANA FARMLAND VALUES AND CASH RENTS CONTINUE TO ADJUST**

Purdue University
Illinois Chapter of American Society of Farm Managers and Rural Appraisers
The U.S. Department of Agriculture’s Economic Research Service (ERS) indicated on Wednesday that, “Net farm income, a broad measure of profits, is forecast to decrease $4.3 billion (6.7 percent) to $59.5 billion in 2018, which would be the lowest level in nominal terms since 2006.”
Long-term interest rate expectations
What the Fed Reserve thinks the interest rate should be

MARKETS CHART OF THE DAY

FED DOT PLOT

December 2017

SOURCE: Federal Open Market Committee

BUSINESS INSIDER
## Land Values by District and Quality, Nov 2017

<table>
<thead>
<tr>
<th>District</th>
<th>Average Value</th>
<th>% Change</th>
<th>High Quality</th>
<th>% Change</th>
<th>Medium Quality</th>
<th>% Change</th>
<th>Low Quality</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest</td>
<td>$9,388</td>
<td>1.6%</td>
<td>$10,829</td>
<td>1.7%</td>
<td>$8,555</td>
<td>1.0%</td>
<td>$6,216</td>
<td>3.3%</td>
</tr>
<tr>
<td>North Central</td>
<td>$7,802</td>
<td>3.2%</td>
<td>$8,730</td>
<td>3.4%</td>
<td>$7,218</td>
<td>3.2%</td>
<td>$5,265</td>
<td>2.0%</td>
</tr>
<tr>
<td>Northeast</td>
<td>$7,543</td>
<td>3.1%</td>
<td>$9,151</td>
<td>2.9%</td>
<td>$7,236</td>
<td>3.5%</td>
<td>$4,965</td>
<td>2.4%</td>
</tr>
<tr>
<td>West Central</td>
<td>$7,377</td>
<td>0.3%</td>
<td>$8,881</td>
<td>0.1%</td>
<td>$6,824</td>
<td>-0.7%</td>
<td>$4,684</td>
<td>2.3%</td>
</tr>
<tr>
<td>Central</td>
<td>$8,097</td>
<td>3.3%</td>
<td>$9,568</td>
<td>2.9%</td>
<td>$7,426</td>
<td>3.3%</td>
<td>$4,993</td>
<td>-3.2%</td>
</tr>
<tr>
<td>East Central</td>
<td>$8,218</td>
<td>3.8%</td>
<td>$9,900</td>
<td>4.2%</td>
<td>$7,674</td>
<td>3.8%</td>
<td>$5,305</td>
<td>3.0%</td>
</tr>
<tr>
<td>Southwest</td>
<td>$6,058</td>
<td>0.0%</td>
<td>$7,571</td>
<td>0.6%</td>
<td>$5,756</td>
<td>1.3%</td>
<td>$3,935</td>
<td>-6.1%</td>
</tr>
<tr>
<td>South Central</td>
<td>$4,172</td>
<td>-1.6%</td>
<td>$5,908</td>
<td>-1.2%</td>
<td>$4,079</td>
<td>-1.2%</td>
<td>$2,824</td>
<td>-2.3%</td>
</tr>
<tr>
<td>Southeast</td>
<td>$6,864</td>
<td>2.2%</td>
<td>$9,471</td>
<td>2.2%</td>
<td>$6,548</td>
<td>4.2%</td>
<td>$3,768</td>
<td>-0.4%</td>
</tr>
<tr>
<td>Iowa Avg.</td>
<td>$7,326</td>
<td>2.0%</td>
<td>$8,933</td>
<td>2.0%</td>
<td>$6,849</td>
<td>2.2%</td>
<td>$4,689</td>
<td>0.5%</td>
</tr>
<tr>
<td>District</td>
<td>Livestock Inventory - 2012</td>
<td>Acres 2012</td>
<td>Harvested Acres 2017</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------------</td>
<td>------------</td>
<td>----------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chickens, Layers</td>
<td>Hogs</td>
<td>Milk Cows</td>
<td>Cattle</td>
<td>Pasture</td>
<td>Timber</td>
<td>Corn</td>
<td>Soybean</td>
</tr>
<tr>
<td>Northwest</td>
<td>30%</td>
<td>26%</td>
<td>29%</td>
<td>22%</td>
<td>7%</td>
<td>2%</td>
<td>15%</td>
<td>16%</td>
</tr>
<tr>
<td>North Central</td>
<td>64%</td>
<td>16%</td>
<td>4%</td>
<td>6%</td>
<td>4%</td>
<td>4%</td>
<td>14%</td>
<td>13%</td>
</tr>
<tr>
<td>Northeast</td>
<td>1%</td>
<td>12%</td>
<td>51%</td>
<td>16%</td>
<td>11%</td>
<td>23%</td>
<td>12%</td>
<td>8%</td>
</tr>
<tr>
<td>West Central</td>
<td>0%</td>
<td>13%</td>
<td>1%</td>
<td>13%</td>
<td>10%</td>
<td>7%</td>
<td>15%</td>
<td>16%</td>
</tr>
<tr>
<td>Central</td>
<td>3%</td>
<td>13%</td>
<td>1%</td>
<td>7%</td>
<td>8%</td>
<td>8%</td>
<td>15%</td>
<td>14%</td>
</tr>
<tr>
<td>East Central</td>
<td>1%</td>
<td>5%</td>
<td>10%</td>
<td>11%</td>
<td>11%</td>
<td>14%</td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>Southwest</td>
<td>0%</td>
<td>2%</td>
<td>0%</td>
<td>9%</td>
<td>12%</td>
<td>5%</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>South Central</td>
<td>0%</td>
<td>2%</td>
<td>1%</td>
<td>9%</td>
<td>25%</td>
<td>19%</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td>Southeast</td>
<td>1%</td>
<td>11%</td>
<td>3%</td>
<td>6%</td>
<td>12%</td>
<td>19%</td>
<td>7%</td>
<td>8%</td>
</tr>
<tr>
<td>Iowa Total</td>
<td>52.2 million</td>
<td>20.4 million</td>
<td>0.17 million</td>
<td>3.8 million</td>
<td>2.5 million</td>
<td>1.2 million</td>
<td>12.9 million</td>
<td>10.0 million</td>
</tr>
</tbody>
</table>
Stronger than expected crop yields

Corn Yield: November 1, 2017
Bushels per Acre

- NW: 199 bu/acre (-3%, 9%)
- NC: 197 bu/acre (-2%, 12%)
- NE: 213 bu/acre (3%, 20%)
- WC: 198 bu/acre (-4%, 15%)
- C: 204 bu/acre (-2%, 15%)
- EC: 207 bu/acre (1%, 16%)
- SW: 184 bu/acre (-4%, 11%)
- SC: 163 bu/acre (-11%, 11%)
- SE: 166 bu/acre (-18%, -2%)

State Average: 197.0 bu/acre

Soybean Yield: November 1, 2017
Bushels per Acre

- NW: 57.5 bu/acre (-9%, 5%)
- NC: 56 bu/acre (-8%, 10%)
- NE: 56.5 bu/acre (-7%, 7%)
- WC: 60 bu/acre (-1%, 15%)
- C: 60 bu/acre (-1%, 11%)
- EC: 60 bu/acre (-1%, 11%)
- SW: 53 bu/acre (-9%, 7%)
- SC: 46.5 bu/acre (-16%, 4%)
- SE: 48 bu/acre (-17%, -5%)

State Average: 56.0 bu/acre

USDA NASS QuickStats

Iowa State University
Extension and Outreach

Center for Agricultural and Rural Development
Above: Acres enrolled in CRP, 2017

Below: % Reduction in CRP Rental Rate 2017 vs. 2016
Land Values by County, Nov 2017

State Average $7,326

Dollar Values

$5,000 or less
$5,000 to $7,000
$7,000 to $8,000
$8,000 to $9,000
$9,000 or more
Percentage Change in Iowa Land Values 2016 to 2017

Percent Changes in Land Values from Nov 2016

CARD
Center for Agricultural and Rural Development

IOWA STATE UNIVERSITY
Extension and Outreach

IOWA STATE UNIVERSITY
Extension and Outreach

CARD
Center for Agricultural and Rural Development
Iowa Farmland Purchases by Buyer Types 1989-2017

- Existing Farmers
- Investors
- New Farmers
- Other

Percent


IOWA STATE UNIVERSITY
Extension and Outreach

Center for Agricultural and Rural Development
## Iowa Farmland Purchases by Seller Types, 2017

<table>
<thead>
<tr>
<th>Region</th>
<th>Active Farmers</th>
<th>Retired Farmers</th>
<th>Estate Sales</th>
<th>Investors</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest</td>
<td>12</td>
<td>17</td>
<td>64</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>North Central</td>
<td>12</td>
<td>19</td>
<td>56</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Northeast</td>
<td>14</td>
<td>34</td>
<td>43</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>West Central</td>
<td>12</td>
<td>23</td>
<td>57</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Central</td>
<td>14</td>
<td>20</td>
<td>55</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>East Central</td>
<td>11</td>
<td>23</td>
<td>55</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Southwest</td>
<td>16</td>
<td>23</td>
<td>48</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>South Central</td>
<td>16</td>
<td>30</td>
<td>33</td>
<td>19</td>
<td>2</td>
</tr>
<tr>
<td>Southeast</td>
<td>9</td>
<td>30</td>
<td>51</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td><strong>STATE</strong></td>
<td><strong>13</strong></td>
<td><strong>23</strong></td>
<td><strong>54</strong></td>
<td><strong>8</strong></td>
<td><strong>2</strong></td>
</tr>
</tbody>
</table>
### Cash Crop Price Predictions for Nov 2017, 2018, 2020 as of May 2017

**Soil Management Land Valuation Conference**  
**May 16, 2018 Wednesday, Scheman Bldg**

<table>
<thead>
<tr>
<th>Region</th>
<th>Cash Corn Prices</th>
<th>Cash Soybean Prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest</td>
<td>$3.34</td>
<td>$3.65</td>
</tr>
<tr>
<td>North Central</td>
<td>$3.42</td>
<td>$3.59</td>
</tr>
<tr>
<td>Northeast</td>
<td>$3.41</td>
<td>$3.59</td>
</tr>
<tr>
<td>West Central</td>
<td>$3.34</td>
<td>$3.59</td>
</tr>
<tr>
<td>Central</td>
<td>$3.36</td>
<td>$3.50</td>
</tr>
<tr>
<td>East Central</td>
<td>$3.42</td>
<td>$3.58</td>
</tr>
<tr>
<td>Southwest</td>
<td>$3.31</td>
<td>$3.56</td>
</tr>
<tr>
<td>South Central</td>
<td>$3.36</td>
<td>$3.59</td>
</tr>
<tr>
<td>Southeast</td>
<td>$3.50</td>
<td>$3.83</td>
</tr>
<tr>
<td><strong>STATE</strong></td>
<td>$3.38</td>
<td>$3.60</td>
</tr>
</tbody>
</table>
Inflation-adjusted Iowa Ag Real Estate Values 1850-2017

Farm Crises and this downturn

Source: USDA-NASS; Ag Census, Iowa Farmland Value Portal
## Positive 1: Real Income Accumulation 2003-2013

### Average annual percent change in nominal values

<table>
<thead>
<tr>
<th>Golden Eras</th>
<th>Iowa Land</th>
<th>U.S. Gross Income</th>
<th>U.S. Net Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910-1920</td>
<td>9.3%</td>
<td>9.0%</td>
<td>8.4%</td>
</tr>
<tr>
<td>1973-1981</td>
<td>19.5%</td>
<td>9.8%</td>
<td>5.3%</td>
</tr>
<tr>
<td>2003-2013</td>
<td>13.7%</td>
<td>7.1%</td>
<td>10.7%</td>
</tr>
</tbody>
</table>

### Crises and Declines

<table>
<thead>
<tr>
<th>Golden Eras</th>
<th>Iowa Land</th>
<th>U.S. Gross Income</th>
<th>U.S. Net Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921-1933</td>
<td>-8.9%</td>
<td>-4.7%</td>
<td>-3.6%</td>
</tr>
<tr>
<td>1981-1987</td>
<td>-14.0%</td>
<td>2.1%</td>
<td>7.3%</td>
</tr>
<tr>
<td>2013-2017</td>
<td>1.1%</td>
<td>-2.4%</td>
<td>-6.4%</td>
</tr>
</tbody>
</table>

### Average annual percent change in inflation-adjusted values

<table>
<thead>
<tr>
<th>Golden Eras</th>
<th>Iowa Land</th>
<th>U.S. Gross Income</th>
<th>U.S. Net Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910-1920</td>
<td>1.7%</td>
<td>1.1%</td>
<td><strong>0.5%</strong></td>
</tr>
<tr>
<td>1973-1981</td>
<td>9.6%</td>
<td>0.7%</td>
<td><strong>-3.4%</strong></td>
</tr>
<tr>
<td>2003-2013</td>
<td>11.0%</td>
<td>4.5%</td>
<td><strong>8.2%</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Crises and Declines</th>
<th>Iowa Land</th>
<th>U.S. Gross Income</th>
<th>U.S. Net Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921-1933</td>
<td>-5.8%</td>
<td>-2.0%</td>
<td>-1.3%</td>
</tr>
<tr>
<td>1981-1987</td>
<td>-15.0%</td>
<td>-2.4%</td>
<td>2.7%</td>
</tr>
<tr>
<td>2013-2017</td>
<td>-0.1%</td>
<td>-3.7%</td>
<td>-7.6%</td>
</tr>
</tbody>
</table>

Source: Zhang and Tidgren 2017
Iowa Landowners tend to hold the farmland; and many don’t have debt

<table>
<thead>
<tr>
<th>Years Owned</th>
<th>% of Iowa Farmland</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10 years</td>
<td>24%</td>
</tr>
<tr>
<td>10-20 Years</td>
<td>21%</td>
</tr>
<tr>
<td>20-30 Years</td>
<td>19%</td>
</tr>
<tr>
<td>30-40 Years</td>
<td>15%</td>
</tr>
<tr>
<td>&gt; 40 Years</td>
<td>20%</td>
</tr>
</tbody>
</table>

Table 3.5: Finance method as a percent of farmland

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Free of debt</td>
<td>62%*</td>
<td>70%*</td>
<td>74%</td>
<td>75%</td>
<td>78%</td>
</tr>
<tr>
<td>Under contract</td>
<td>18%*</td>
<td>11%*</td>
<td>4%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Mortgaged</td>
<td>20%</td>
<td>19%</td>
<td>22%*</td>
<td>21%*</td>
<td>19%</td>
</tr>
</tbody>
</table>

* Indicates significant differences relative to the 2012 survey at the 5 percent level.

Source: Ag DM PM1980, 2012 Iowa Farmland Ownership and Tenure Survey
Positive 2: Historically low interest rates

Source: [http://www.multpl.com/10-year-treasury-rate](http://www.multpl.com/10-year-treasury-rate)
Positive 3: Prudence in Ag Lenders/Regulators

• Banking Regulations
  – More stringent, frequent stress-test
  – BASEL III, liquidity requirements for banks
  – (Ron Hansen – Iowa Division of Banking Superintendent) walk into this “with eyes wide open”

• Cash-Flow Based Loan Practice
  – Before 1987: loan to value ratio is 85%
  – 1987-2008: loan to value ratio is 65%
  – After 2008: use cash-flow method for collateral ($4 corn, $10 bean) and 50% of cash flow value

Source: Zhang and Tidgren 2017
Annual Mortgage Payments vs. Cash Rents for Iowa Farmland Loan

Source: Zhang and Tidgren 2017
GMO in China: Controversy/Divide

China Wants GMOs. The Chinese People Don't.

The Chinese have long been wary of genetically modified organisms. The country allows imports of genetically modified corn and soybeans for animal feed. But it’s held off on domestic commercialization of those crops.

Over the past year, China has signaled it would relax that stance. This week it released its latest five-year plan for science and technology, saying it would push for the commercialization of biotech corn and soybeans in the next few years.
GMO in China: Controversy/Divide

Yongyuan Cui

Larry King in China; Key opponent voice of GMO

GMO corn illegal
China OKs two GMO products for import

07/17/17 2:45 PM  By Steve Davies

WASHINGTON, July 17, 2017 - China has approved two more genetically modified products for import, which should leave four products awaiting decisions from the Chinese Ministry of Agriculture (MOA). But Dow AgroSciences said today that the ministry is “now indicating that Enlist soybeans is not covered” by a 100-day economic action plan initiated by the U.S. and Chinese governments in April.

The ministry has approved Syngenta’s Agrisure Duracade corn, engineered to be resistant to corn rootworm, and Monsanto’s Roundup Ready corn. Dow received import approval last month for Enlist corn, which China approved along with a Monsanto soybean variety, Vistive Gold. At the time, Dow said it had received inquiries from China’s National Biosafety Committee about Enlist soybeans and planned to address those questions quickly.

Today, Dow AgroSciences said it “understands Enlist soybeans was considered one of ‘the eight pending biotechnology traits’ by the U.S. Department of Commerce for the 100-day initiative referenced in the (U.S.-China) joint release on May 10,” which provided a progress report on the 100-day plan.
China's cities lead the world in bike-sharing schemes

Number of shared bicycles by city and bike-sharing company ('000)

<table>
<thead>
<tr>
<th>City</th>
<th>Shared Bicycles ('000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shanghai (all schemes)</td>
<td>450</td>
</tr>
<tr>
<td>Beijing, Shenzhen, Guangzhou</td>
<td>100</td>
</tr>
<tr>
<td>London (Santander Cycles)</td>
<td>13.6</td>
</tr>
<tr>
<td>New York City (Citi Bike)</td>
<td>10</td>
</tr>
<tr>
<td>Washington DC (Capital Bikeshare)</td>
<td>3.7</td>
</tr>
<tr>
<td>San Francisco (Bay Area Bike Share)</td>
<td>1.03</td>
</tr>
</tbody>
</table>

Sources: Shanghai Municipal Communist Party Committee; companies named above: SPIN

China's ‘Uber for bikes’ model is going global
A corny tale

China imports a farm from Iowa

A slice of the Midwest outside Beijing

Presentations


2017 Iowa Farmland Ownership and Tenure Survey

• First land ownership survey in the nation: 1949

• Only one conducted at frequent intervals:

Next one in 2017
Results released spring 2018
Documentaries about China

- China: Time of Xi – [https://www.youtube.com/watch?v=NEGp6y3uGIa](https://www.youtube.com/watch?v=NEGp6y3uGIa)
- One Belt One Road [https://www.youtube.com/watch?v=_NtprkECciU](https://www.youtube.com/watch?v=_NtprkECciU)
- A Bite of China – Chinese cuisine/culture [https://www.youtube.com/watch?v=Awj4u-Ntgs&list=PLYOTfstAG_IPjyEeT472GEJzafYmBiA3w](https://www.youtube.com/watch?v=Awj4u-Ntgs&list=PLYOTfstAG_IPjyEeT472GEJzafYmBiA3w)
- Bird’s Eye China – aerial China by province [https://www.youtube.com/watch?v=LVjnASDa6Pw](https://www.youtube.com/watch?v=LVjnASDa6Pw)
- The world’s future MegaProjects (2017-2040) [https://www.youtube.com/watch?v=CiQ874ZuIno](https://www.youtube.com/watch?v=CiQ874ZuIno)
- China’s MegaProjects – available in Chinese only
Iowa Farmland Value Portal

#ISULandValue

2% increase since Nov 2016

https://www.card.iastate.edu/farmland
Thank You!

Wendong Zhang
Assistant Professor and Extension Economist
478C Heady Hall
Iowa State University
515-294-2536
wdzhang@iastate.edu
http://www2.econ.iastate.edu/faculty/zhang