FARMLAND TRENDS AND OWNERSHIP

Midwest Agriculture Conference
Federal Reserve Bank of Chicago
November 28, 2023
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Farm Assets</td>
<td>1,203</td>
<td>1,709</td>
<td>2,171</td>
<td>2,880</td>
<td>3,175</td>
<td>3,837</td>
<td>4,088</td>
</tr>
<tr>
<td>Real Estate</td>
<td>946</td>
<td>1,373</td>
<td>1,660</td>
<td>2,366</td>
<td>2,641</td>
<td>3,175</td>
<td>3,418</td>
</tr>
<tr>
<td>Farm Debt</td>
<td>164</td>
<td>209</td>
<td>279</td>
<td>357</td>
<td>441</td>
<td>496</td>
<td>520</td>
</tr>
<tr>
<td>Real Estate</td>
<td>85</td>
<td>114</td>
<td>154</td>
<td>209</td>
<td>289</td>
<td>335</td>
<td>354</td>
</tr>
<tr>
<td>Equity</td>
<td>1,039</td>
<td>1,500</td>
<td>1,892</td>
<td>2,523</td>
<td>2,733</td>
<td>3,340</td>
<td>3,568</td>
</tr>
</tbody>
</table>

|                      |       |       |       |       |       |       |       |
| Debt/Asset Ratio     | 13.6  | 12.2  | 12.8  | 12.4  | 13.9  | 12.9  | 12.7  |
| Real Estate/Assets   | 78.7  | 80.3  | 76.5  | 82.1  | 83.2  | 82.7  | 83.6  |
| Real Estate/Debt     | 51.7  | 54.5  | 55.2  | 58.5  | 65.4  | 67.5  | 68.1  |

Source: USDA-ERS
Long-run US farm real estate values ($/acre)

Source: USDA-NASS

Center for Commercial Agriculture

Crop Outlook Webinar October 9, 2020
Indiana Farmland Values

Top, Average, and Poor Quality Land, 1978 – 2023

Source: Purdue Land Value and Cash Rent Survey
A simple model of farmland prices

\[
\text{Price} = \frac{\text{Expected returns}}{(\text{Discount rate} - \text{growth rate})}
\]
A simple model of farmland prices

Price = \frac{\text{Expected returns}}{(\text{Discount rate} - \text{growth rate})}

Assuming a growth rate of 1%:

<table>
<thead>
<tr>
<th>Expected returns</th>
<th>Discount rate</th>
<th>3%</th>
<th>4.5%</th>
<th>6.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>10,000</td>
<td>5,714</td>
<td>4,000</td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>15,000</td>
<td>8,571</td>
<td>6,000</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>20,000</td>
<td>11,429</td>
<td>8,000</td>
<td></td>
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</tbody>
</table>
Farmland Returns
Farm Incomes Forecast to decrease in 2023

February (t)
August
November
February(t+1)
Estimate

$ Bil.
250.0
200.0
150.0
100.0
50.0
0.0

11/29/2023
Cash rents, 2000 – 2023

Source: Purdue Land Value and Cash Rent Survey
Development premium and housing starts

- Starts (100)
- Premium

Housing Starts (100) or Development Premium (%)


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Discount rates

Fed Funds

1971Q1 1977Q1 1983Q1 1989Q1 1995Q1 2001Q1 2007Q1 2013Q1 2019Q1

%
THANK YOU

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