Investing Agricultural Land

Michael Swanson Ph.D.
Wells Fargo
Economic and Commodity Risk

Everything is connected.

We just can’t see how.
A single loop ... from a subsystem
Risk versus Uncertainty

- **Risks**
  - Weather
  - Input prices
  - Output prices

- **Uncertainty**
  - Ethanol policy
  - Fiscal policy
  - Monetary policy
  - Global trade policy
Inter-connected Markets

• Economic growth
  – GDP, Population and Income
  – Currency competition

• Federal Reserve policy
  – Beliefs
  – Influence versus control

• US Biofuels policy
  – RFS failed to anticipate
    • Declining gasoline consumption
    • Impact of falling natural gas pricing
  – Long-term outlook highly uncertain
What is the outlook for global growth?

• Trend v. trend-rate
  – Trending higher
  – Growing slower

• Do China’s numbers really matter?
  – Observable
  – Implied
  – Hoped for

• What are the other key markets?
The numbers are big

Global Growth Factors

Real GDP in Billions of USD
Population in Millions


1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 10,000
The trend is different

Global Growth Factors

Real GDP in Billions of USD

in percent change

Population in Millions

Where's China headed?

Chinese Demographics

Median Age vs. Children per woman

- 1950-1955: 6
- 1965-1970: 4
- 1980-1985: 2
- 1995-2000: 1
- 2010-2015: 2
- 2025-2030: 4

Children per woman:
- 1950-1955: 6
- 1965-1970: 4
- 1980-1985: 2
- 1995-2000: 1
- 2010-2015: 2
- 2025-2030: 4

Median Age:
- 1950-1955: 2
- 1965-1970: 3
- 1980-1985: 4
- 1995-2000: 5
- 2010-2015: 6
- 2025-2030: 7
Economic policy and currency

• Extraordinary Fed Policy
  – Interest rates
  – Money supply

• Exchange linkages
  – General trade
  – The “agricultural” dollar
What’s wrong? Assumptions ...

GDP versus Potential GDP

- GDP
- Potential GDP
Policy operates on beliefs as much as facts
Asset pricing

Ag land is sensitive to cash flow and interest rates
The Fed “influences” not controls

10 Year Treasury Yield Constant Maturity
The revenue component

Corn Price per Bushel
SW Minnesota

How you get there matters

Home Equity and Farm/Ranch Real Estate

- Home owner equity
- Farm Real Estate

Jan-60 Jan-65 Jan-70 Jan-75 Jan-80 Jan-85 Jan-90 Jan-95 Jan-00 Jan-05 Jan-10

Home owner equity:
- 2,000
- 4,000
- 6,000
- 8,000
- 10,000
- 12,000
- 14,000

Farm Real Estate:
- 5,982
- 13,021
- 7,700
- 2,189

WELLS FARGO
So what’s the future?

• **Lack of discipline in the market**
  – Over-emphasis of economies of scale
  – Short-term cost optimization
  – The land markets are “too narrow”

• **Organic versus acquisition growth**
  – Different responses to environment
  – Land is “almost” backwards bending
  – Improvement supply curve relatively flat

• **The corn annuity talk**
The slope is not steep enough

Rent versus Yield

'09 Rent = $1.28 per bu. - $35
R² = 0.92

'10 Rent = $1.29 per bu. - $38
R² = 0.94

'11 Rent = $1.57 per bu. - $64
R² = 0.90

'12 Rent = $1.76 per bu. - $73.
R² = 0.87
There wasn’t discipline before

<table>
<thead>
<tr>
<th>Rent per bushel</th>
<th>$ 0.73</th>
<th>$ 0.67</th>
<th>$ 0.63</th>
<th>$ 0.62</th>
<th>$ 0.57</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low 20% 20-40% 40-60% 60-80% High 20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of fields</td>
<td>122</td>
<td>112</td>
<td>113</td>
<td>96</td>
<td>102</td>
</tr>
<tr>
<td>Number of farms</td>
<td>77</td>
<td>77</td>
<td>78</td>
<td>76</td>
<td>78</td>
</tr>
<tr>
<td>Yield per acre (bu.)</td>
<td>159</td>
<td>177</td>
<td>183</td>
<td>190</td>
<td>195</td>
</tr>
<tr>
<td>Seed, Fertilizer and Chemical</td>
<td>$ 150</td>
<td>$ 144</td>
<td>$ 140</td>
<td>$ 137</td>
<td>$ 124</td>
</tr>
<tr>
<td>Land rent</td>
<td>$ 117</td>
<td>$ 118</td>
<td>$ 116</td>
<td>$ 117</td>
<td>$ 111</td>
</tr>
</tbody>
</table>
Higher prices have made worse

<table>
<thead>
<tr>
<th>Rent per bushel</th>
<th>$1.53</th>
<th>$1.33</th>
<th>$1.29</th>
<th>$1.20</th>
<th>$0.89</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low 20%</td>
<td>125</td>
<td>135</td>
<td>159</td>
<td>103</td>
<td>118</td>
</tr>
<tr>
<td>20 - 40%</td>
<td>76</td>
<td>77</td>
<td>77</td>
<td>77</td>
<td>77</td>
</tr>
<tr>
<td>40 - 60%</td>
<td>157</td>
<td>176</td>
<td>187</td>
<td>190</td>
<td>193</td>
</tr>
<tr>
<td>60 - 80%</td>
<td>370</td>
<td>367</td>
<td>368</td>
<td>329</td>
<td>299</td>
</tr>
<tr>
<td>High 20%</td>
<td>240</td>
<td>233</td>
<td>241</td>
<td>229</td>
<td>171</td>
</tr>
</tbody>
</table>

Corn on Cash Rent -- 2012 South Central Minnesota

Seed, Fertilizer and Chemical: $370, $367, $368, $329, $299
Land rent: $240, $233, $241, $229, $171
Better marketing and hedging isn’t the answer

MN Cash Rent Corn: Total Cost / Bushel

- Low Profit
- High Profit
Who gets paid what?

- **Land – 25 to 35%**
  - On average is paid – 25%
  - Is just another asset class
  - Can be overpriced/underpriced

- **Management – 15 to 25%**
  - Your time
  - Your smarts

- **Everything else – 45 to 55%**
It’s about bushels not acres

• **Land prices have responded to:**
  – Crop prices
  – Low interest rates

• **Land improvements have not**
  – Tiling
  – Leveling
  – Irrigation
  – Soil enhancement
Organic or acquisition growth?

A time and a place for different tactics
# Corn Annuity Investment

<table>
<thead>
<tr>
<th>Land Purchase</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$10,000 per acre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 bushel per acre APH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land's share = 33%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost per bushel of annuity = $150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tiling investment</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$900 per acre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 bushels per acre increase to APH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost per bushel of annuity = $60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The annuity question

• All investments are equally sensitive to
  – Crop prices
  – Interest rates

• It’s about
  – Buying the best return
  – Understanding expected and variation
  – Self-discipline
  – Tax advantage
Final thoughts

• Don’t count on global demand to bail you out
  – Domestic competitors
  – Foreign competitors

• Policy
  – Beliefs
  – Influence versus control

• Discipline trumps smarts
  – Can’t change the market just yourself
  – Investor versus traders