Strategic Risk Management in Agriculture

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Figure 1: Risk Tolerance by Professional Group

<table>
<thead>
<tr>
<th>Risk Tolerance</th>
<th>General Population (n=1788)</th>
<th>All Farmers (n=586)</th>
<th>Row Crop or Dairy Farms (n=343)</th>
<th>Farms Reporting Gov Payments (n=103)</th>
<th>Nonfarm Business Owners (n=718)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (1-4)</td>
<td>26</td>
<td>27</td>
<td>16</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Medium (5-7)</td>
<td>39</td>
<td>40</td>
<td>39</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>High (8-11)</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
</tr>
</tbody>
</table>
Chart 1: Non-Real Estate Farm Loan Volumes by Purpose

Billion dollars

Source: Agricultural Finance Databook, Table A.3
Two (Related) Types of Ag Risk

• Operations and Financing
  – price, cost, and yield
  – debt (including interest expense)

• Debt Financing Links Them
  – operational debt for cultural costs
  – debt incurred to cover thin or negative margins

• Address Margin Risk Perspective
  – revenue is volatile; function of price and yield
  – costs are less volatile
  – margin risk results
Risk and Uncertainty Are the Rule

• Risk and Uncertainty Misunderstood
• Tendency to Confuse Risk and Uncertainty
• Risk is Quantifiable; Uncertainty is Not
  – we can see it; if we can’t see it, it is unknown
  – need to manage both

• Uncertainty
  – regulations and policies
  – natural disasters
  – family mishaps
  – global trade
  – economic, political, social, environmental
Risk management is not a checklist; it is a mentality that needs to be top-of-mind.

– Frederick W. Smith, Chairman and CEO
FedEx Corporation
Re-examine Risk and Risk Management

• No Risk, No Reward
  – no one has problem with prices going up
  – when prices go down there is trouble
  – can’t have one without the other
• Ag Risk Understood Generally in Terms of
  – prices $\times$ yields = revenues
• Result: Risk Management Focus on Revenues
• Need to Focus on Margins
• Think of Risk as a Cost
  – future losses incur costs today
  – costs reduce value of operations
### Revenues Driven by Spot and Yield

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Spot Price (40 lbs per carton)</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>$8.10</td>
<td>850</td>
</tr>
<tr>
<td>2005</td>
<td>$7.93</td>
<td>804</td>
</tr>
<tr>
<td>2006</td>
<td>$10.75</td>
<td>725</td>
</tr>
<tr>
<td>2007</td>
<td>$12.38</td>
<td>830</td>
</tr>
<tr>
<td>2008</td>
<td>$11.93</td>
<td>824</td>
</tr>
<tr>
<td>2009</td>
<td>$9.08</td>
<td>928</td>
</tr>
<tr>
<td>2010</td>
<td>$12.88</td>
<td>983</td>
</tr>
<tr>
<td>Mean</td>
<td>$10.44</td>
<td>849</td>
</tr>
</tbody>
</table>

Forward Contract Prices Vary with Spot Price Between $11.50 and $12.50 on Sliding Scale ($0.25 Increments)
## Harvest Costs Variable (Yield Driven); Cultural Costs Fixed

Production Costs (per Acre, Single Harvest)

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost (per Acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed</td>
<td>$144.00</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>$359.00</td>
</tr>
<tr>
<td>Weed Control/Thinning Labor</td>
<td>$146.00</td>
</tr>
<tr>
<td>Pest Management (includes PCA costs)</td>
<td>$582.00</td>
</tr>
<tr>
<td>Water</td>
<td>$280.00</td>
</tr>
<tr>
<td>Irrigation Labor</td>
<td>$241.00</td>
</tr>
<tr>
<td>Tractor Labor</td>
<td>$148.35</td>
</tr>
<tr>
<td>Fuel</td>
<td>$172.93</td>
</tr>
<tr>
<td>Tractor and Machinery Cost</td>
<td>$255.58</td>
</tr>
<tr>
<td>Supervision and General Labor</td>
<td>$105.00</td>
</tr>
<tr>
<td>Compost</td>
<td>$50.00</td>
</tr>
<tr>
<td>Total Cultural Costs</td>
<td>$2,484.56</td>
</tr>
<tr>
<td>Fresh Market Harvest Cost ($/Carton)</td>
<td></td>
</tr>
<tr>
<td>Cut/Pack/Haul</td>
<td>$5.85</td>
</tr>
<tr>
<td>Average Yield/Acre (Cartons)</td>
<td>850</td>
</tr>
<tr>
<td>Total Harvest Cost (cooling, palletize, and sell) per acre</td>
<td>$4,972.50</td>
</tr>
<tr>
<td>Total Production Costs</td>
<td>$7,457.06</td>
</tr>
<tr>
<td>Cash Overhead per acre</td>
<td>$130.00</td>
</tr>
<tr>
<td>Land Rent per Acre</td>
<td>$1,100.00</td>
</tr>
<tr>
<td>Interest on Operating Capital (based on 6.275% per year on half of cultural cost)</td>
<td>$38.98</td>
</tr>
<tr>
<td>Total Overhead Cash Cost</td>
<td>$1,268.98</td>
</tr>
<tr>
<td>Depreciation and Interest on Investments</td>
<td>$50.00</td>
</tr>
<tr>
<td>Total per Acre Cost</td>
<td>$8,776.04</td>
</tr>
<tr>
<td>Total Cost less Harvest Cost</td>
<td>$3,803.54</td>
</tr>
</tbody>
</table>
Managing Margins: Strategic Function

- Farms Have to Manage Margins Better
  - stabilize profit margins at some acceptable range
- Farms Become More Cost Sensitive
  - more input needed to meet additional demand
  - reluctant to let costs eat into margins
  - cut four biggest expenses
- Farms Have to Become More Efficient
  - demand same from suppliers
- Credit Becomes Harder to Acquire
Managing Margin Risk: Two Goals

• Reduction in Volatility
  – revenues
  – costs

• Maintain Revenues in Excess of Costs
  – margin will squeeze
  – avoid going negative

• Do These Simultaneously
  – that’s the trick
Strategic Implications

• For Business and Industry
• Manage to Stabilize Margins
  – focus on managing costs as well as revenue
  – no perfect hedge; basis risk remains
• Use Crop Insurance When Needed
• Take Advantage of Historically Low Rates
  – lock in rates or refinance
• Optimize Leverage
  – pay down debt (or restructure) if overleveraged
  – don’t overextend financial situation
Farm Credit Administration Guidelines

• Borrowers Should Have
  – business and marketing plans
  – a succession plan
  – hedging and insurance strategies
  – separate line of credit for risk management activities
Expect Greater Uncertainty Ahead

• Typical Responses
  – increase focus on managing revenue
  – build up finances
  – pay down debt; deleverage; restructure; sell assets
  – reduce time exposure to risk
  – try to time markets

• Benchmark: Do Nothing; Hope for the Best

• Risk Management Components
  – production (insurance – crop, p & c, health, life)
  – marketing, financial, legal, personal

• All Part of Strategic Business Plan
Strategic Planning

In preparing for battle I have always found that plans are useless, but planning is indispensable.

—Dwight David Eisenhower

Let our advance worrying become advance thinking and planning.

—Sir Winston Churchill
Strategy and Planning: Against Our Nature

• We are Generally Bad at Planning
  – organizations are worse

• We are Risk Averse
  – prefer reward to loss
  – planning forces us to anticipate risk of failure

• Short-Term Thinking and Economic Behavior
  – plan for long-term
  – extrapolating short-term is dangerous practice

• Strategy is Counterintuitive
  – plans are useless; planning is essential
Strategy is a Dynamic Process

- Information, Data, Material Used for Planning are Constantly Changing
- Plan and Process Must be Continually Improved and Reinvigorated
- Internal and External Needs Change
- Feedback Loop Exists to Keep Plan Modified and Up-to-Date
- Plans are Useless; Planning is Essential
Risk is Part of Industry Structure

The Five Forces That Shape Industry Competition

- Threat of New Entrants
- Bargaining Power of Suppliers
- Rivalry Among Existing Competitors
- Bargaining Power of Buyers
- Threat of Substitute Products or Services

- **Formulate**
  - develop statement of purpose
  - external and internal analyses
  - develop, evaluate, and select strategies
  - strategies products of SWOT analysis; not add-ons
  - strategies address factors and how to be profitable

- **Implement**
  - create policies and goals
  - allocate resources

- **Evaluate**
  - performance metrics
  - feedback information into ongoing strategic process
Formulate: Internal & External Analyses (SWOT Analysis)

- Internal: Strengths and Weaknesses
  - value chain
- External: Opportunities and Threats
- External Forces Affecting the Business
  - industry structure
  - competition and markets
  - economics, society, demographics
  - environment, politics, regulations
  - technology
Formulate: Strategy Selection

- Which is Best for Us Right Now?
- Evaluate and Prioritize Strategic Choices
- Based on Factor Analyses and SWOT
- Recognize Importance of Good Business Sense in Strategy Selection
Formulate: Financial Evaluation

- Rank Strategies Using Pricing Models
  - NPV and real options
- Important: Consider Risk of Each Strategy
  - greater risk requires greater return
  - quantitative and qualitative
- Prioritize by Value-to-Cost
  - first implement strategies with high values-to-cost and lower risk
  - lower values-to-cost and high risk later
Implement: Allocating Resources

- Fewer Than 10% of Strategies are Implemented Successfully (Misallocation)
- Top Responsibility of Strategic Management
- Four Types of Resources:
  - financial, physical, HR, and IT
- Must Be Consistent with Strategic Goals
  - budget reflects true values
Evaluate: The Process

- Back to Square One (Success, Not Failure)
- Revise External and Internal Analyses
- Compare Revisions and Results to Original Expectations and Assumptions
  - identify differences and understand reasons for them
- Important Differences Indicate Need for Change
- Small Changes Add Up Over Time
  - small changes always occur
  - dangerous to ignore
Evaluate: Expect the Unexpected

• Significant Change Can Happen Quickly
  – low probability but huge impact
  – little time to react
  – planning helps prepare
  – plan for the best and plan for the worst

• Have Contingency Plan
  – Plan B scenario
  – Worst Case scenario
  – Exit Strategy (how do I get out of this?)

• Know What to Do When Things Go Wrong
Evaluate: Adapt or Perish

- Strategic Process is Never Ending
- New Information Drives Process
  - operations generate new information
    - fed into external and internal analysis
  - new objectives and strategies result
  - can change nature of business and company
- External and Internal Environments Change
  - competitors react to your strategies; you react to theirs
- Failure to Evaluate Kills Many Strategic Efforts
- Is It Working? Failing? Can We Do Better?
Farming looks mighty easy when your plow is a pencil and you're a thousand miles from the corn field.

—Dwight David Eisenhower
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