Strategic Risk Management in Agriculture

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Figure 1: Risk Tolerance by Professional Group

- General Population (n=1788)
- All Farmers (n=586)
- Row Crop or Dairy Farms (n=343)
- Farms Reporting Gov Payments (n=103)
- Nonfarm Business Owners (n=718)
Chart 1: Non-Real Estate Farm Loan Volumes by Purpose

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 \text{yields} = \text{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</th>
<th>Yield (40 lbs per carton)</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</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>$241.70</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>$5.85</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>
</tbody>
</table>

Total Production Costs: $7,457.06
Cash Overhead per acre: $130.00
Land Rent per Acre: $1,100.00
Interest on Operating Capital (based on 6.275% per year on half of cultural cost): $38.98
Total Overhead Cash Cost: $1,268.98
Depreciation and Interest on Investments: $50.00
Total per Acre Cost: $8,776.04
Total Cost less Harvest Cost: $3,803.54
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
- Threat of Substitute Products or Services
- Bargaining Power of Buyers

- **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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