Focus on Farm Finances

#5: Decision-making in an Uncertain World

Jay Parsons
Cory Walters
Kate Brooks
Department of Agricultural Economics
Definition of Risk

• RISK is the effect of uncertainty on objectives.\(^1\)
  – Risk is objective focused.
    • What are you trying to accomplish?
  – Risk management explicitly addresses uncertainty
    • If you ignore the risks you don’t understand, you are probably in trouble or soon going to be.
  – Risk has both positive and negative effects.

\(^1\)ANSI/ASSE/ISO 31000 Risk Management Principles and Guidelines
Sources of Risk in Agriculture

1. Marketing/Price Risk
2. Production Risk
3. Institutional/Legal Risk
4. Human Risk
5. Financial Risk
Financial Risk Management Technologies

• Crop Insurance
  – Complex, over 250 contract combinations
  – Livestock/forage insurance
  – Insures farm level losses
  – Evolving, Yield Exclusion, Enterprise unit by practice
  – Subsidized

• Farm Bill
  – Insures losses at an aggregate level
  – Disaster assistance
  – Payments are capped
  – Subsidized

• Commodity futures market
Financial Technologies and the Farm

• Technologies work together:

• Synergies exist!
Farm Risk is Unique

- Yield risk is yours
  - Resulting Actual Production History (APH) is yours, this impacts usefulness of crop insurance
    - Low APH relative to expected yield = not a very good crop insurance policy.
- Prices are specific due to basis and your transportation cost to the elevator
- Production costs are unique to you
- Financial position is yours
- Re-evaluate each year
- Consequence = general statements about what you should do may be flawed.
Risk

• From the dictionary:
  – Risk = Possibility of suffering harm or loss
  – Uncertainty = Condition of being in doubt

• Risk is going out of business due to experiencing financially bad low probability outcomes. Uncertainty is the nature of the business.
  – Example, Losing a penny (dime, nickel, or quarter) in corn price, while unfortunate, is the nature of the business. Losing your business, is what business owners strive not to do.
Objective

• Identify net income risk reducing impacts of crop insurance, Farm Bill, and hedging for 2016 crop year

• We first identify crop risk exposure
  – Farm yield, commodity price, production costs

• Focus on two simple objectives:
  – Highest expected net income at the beginning of the year, when the investment is being made. We use March 1st – insurance base price is set
  – Minimize probability of bankruptcy.
    • Assumes we only focus only on financially bad outcomes
An Example

• First, identify price and yield distributions

• Second, motivate the relations between crop insurance and financial standing

• Third, motivate relation between insurance, hedging, Farm Bill and financial standing
Expected 2016 December futures = $3.99

Your expected fall basis shifts the map. A lower basis shifts the map to the left. Higher basis shifts the map to the right.
Non-Irrigated Corn Yield Distribution for Thayer Co. NE

Source: NASS
Irrigated Corn Yield Distribution, Thayer, Co. NE

Source: NASS
Non-Irrigated Net Income, Thayer Co. NE

- Production costs = $500/Acre + Harvest cost

- With 85% coverage level, $130 to $145 per acre in capital required for bad events
- Amount increases with lower coverage levels

Cumulative Probability vs. Crop Income

- Premiums and no payments

Ins_pre_level:
- 60%
- 65%
- 70%
- 75%
- 80%
- 85%
Irrigated Net Income, Thayer Co. NE

Production costs = $950/Acre + Harvest cost

With 85% coverage level, $260 to $240 per acre in capital required for bad events.
Net Income without and with Crop Insurance or Farm Bill

- Crop insurance protects against risk.
- Crop insurance and Farm Bill are complements

Nothing, PLC, ARC-Co, RP-80%
Risk, 1% Expected Shortfall

Bushels Hedged

$/Acre

ARC-RP80%
PLC-RP80%
SCO-RP80%
NoPay-RP80%
No Ins

Crop Insurance Safety Net
Crop Insurance + ARC-CO Safety Net with 40% of Guarantee Hedged
Remarks

- Crop insurance is the cornerstone managing risk
  - Rigorously evaluate new options (i.e., YE, TA-APH)
  - Build your APH so it becomes as close as possible to your expected yield
    - Compare your APH to your expected yield to get an idea of how well crop insurance will protect you. This is also called the ‘hidden deductible’
  - Appears to complement both ARC-Co and Hedging
  - Higher coverage levels = less working capital on hand for bad even and higher premiums.

- What helps you survive? Lower premiums or additional working capital incase of a bad event?
Livestock Industry Risk is Unique

- Type & Species of Livestock Operation
  - Contracting vs. non contracting
- Prices are specific due to operation timing and local basis and transportation costs
- Production costs are unique to you
- Financial position is yours
- Re-evaluate each year
- Consequence = general statements about what you should do may be flawed.
FIGURE 3: SEASONAL PRICE INDEX -- 700-800 LBS FEEDER STEERS
NEBRASKA DIRECT, 2005-2014

Data: USDA-AMS

- Gray triangles: 10 year average
- Red line: +/- 1 Std Dev
March 2016 Feeder Cattle Futures
Price Distribution

Expected 2016 March futures = $145.93

Your expected fall basis shifts the map. A lower basis shifts the map to the left. Higher basis shifts the map to the right.
Livestock Risk Protection

• Price Risk Protection
  – Livestock Risk Protection
  – Livestock Gross Margin

• Other Risk Protection
  – Pasture Range & Forage Insurance
  – Disaster Assistance
    • Livestock Forage Disaster Program (grazing losses)
    • Livestock Indemnity Program (livestock deaths)
Focus on Farm Finances
Putting it all together

• Outlook
  – Crop, Livestock, Policy & Financial Outlook
• Know your costs
  – Inputs, operating system, family living
• Negotiating a lease
  – Trends, communications & writing
• Communicating with your banker
  – Banker perspective: documentation and loan requests
• Decision-making in an uncertain world
  – risk
What is a Marketing Plan?
Marketing Questions

• Every operation should develop and MAINTAIN a marketing plan
  – What to produce/sell?
  – Where to sell?
  – When to price/sell?
  – Goals/objectives current market conditions
  – How accomplish marketing goals & objectives
Marketing Plan

• Planning is Essential!!!!!!

• KNOW YOUR COSTS OF PRODUCTION!

• Understand interactions between all aspects of operation and marketing

• Set Triggers!

• EVALUATE!
Resource

• Farm.unl.edu

• Post-harvest grain marketing workshops
  – http://go.unl.edu/marketingworkshops

• Protecting Profits workshops
  – Helping Nebraska cattle producers manage risk