

8. Managing Your Grain Marketing Risk

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Mykel Taylor joined the Department of Agricultural Economics as an Assistant Professor in 2011. Her research and extension programs are focused in the areas of crop marketing and farm management. She grew up on a cattle ranch in Montana and attended Montana State University majoring in Agribusiness Management. Her PhD in Economics is from North Carolina State University. Mykel has worked in extension positions at both Kansas State University and Washington State University. Some of her current research areas include measuring basis risk for commodity grains, understanding the implications of food safety and country of origin labeling on meat demand, and evaluating direct marketing strategies for diversified crop and livestock farmers.

Abstract/Summary

Since 2007, increased volatility in commodity markets has meant higher risk exposure for grain producers. Forward contracts offer a way to protect against both price and basis risk by transferring the risk to the elevators selling the contracts. But what is the price of this risk transfer, how has it changed over time, and what factors are driving the risk premiums of forward contracts? These questions and more will be addressed as we discuss the changing landscape for commodity grain marketing.

Basis Volatility, Risk Premiums, and Forward Contract Pricing

Mykel Taylor

Risk and Profit Conference
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- Basis defined:
 - Basis = cash price – futures price**
- Basis reflects
 - Transportation cost to terminal market
 - Local demand (feedlots, ethanol plants)
 - Returns to storage
- Basis can (usually) be predicted with more accuracy than cash or futures prices

- Market fundamentals affect cash and futures prices in the same way
 - Absolute difference remains stable
- Hedging vs. forward contracting
 - When basis volatility is low, there is less risk in forward pricing wheat with a futures hedge
 - If basis volatility is high (or you expect the basis to widen), forward contracts can be used to avoid basis risk

- Hedging example without basis change

	Futures	Cash	Basis
February	\$9.00/bu	\$8.50/bu	-\$0.50
Action:	Hedge cash position by selling futures contracts at \$9.00		
June	\$8.00/bu	\$7.50/bu	-\$0.50
Action:	Close out hedge by purchasing futures contracts at \$8.00		
Return on hedge:			\$1.00/bu
Effective cash price in June:			\$8.50/bu

- Hedging example with basis change

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Effective cash price in June:			\$8.00/bu

Basis risk can cost you!

- Basis relationships, for a given location, tend to be stable over time

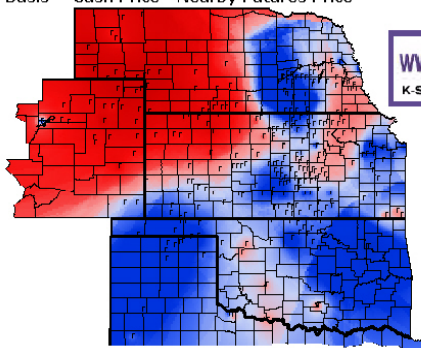
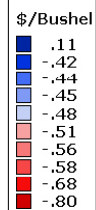
Expected basis = Actual basis

- Is this the case today?

Wheat Basis, 08-08-2012

Basis = Cash Price - Nearby Futures Price

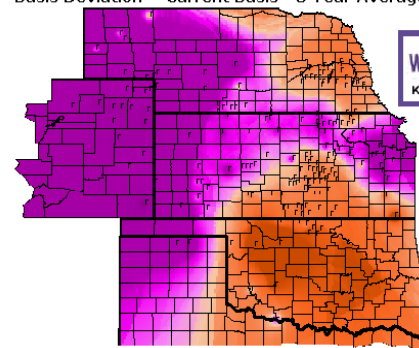
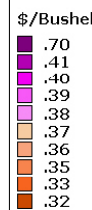
KCBT Sept
Futures
Price: \$9.04



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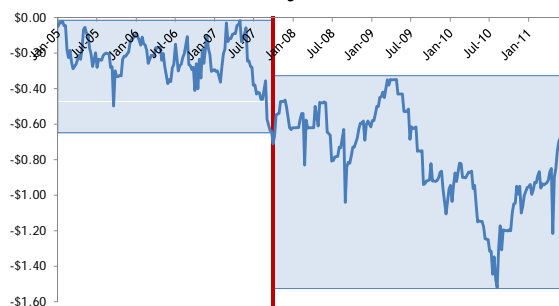
Wheat Basis Deviation, 08-08-2012

Basis Deviation = Current Basis - 3 Year Average Basis (2009, 2010, 2011)

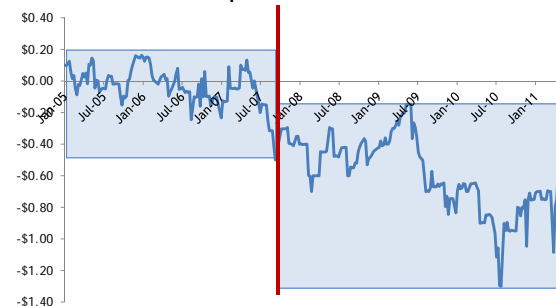


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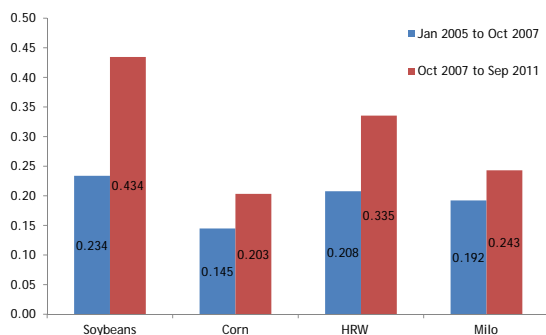
Garden City HRW Basis



Topeka HRW Basis



Standard Deviation

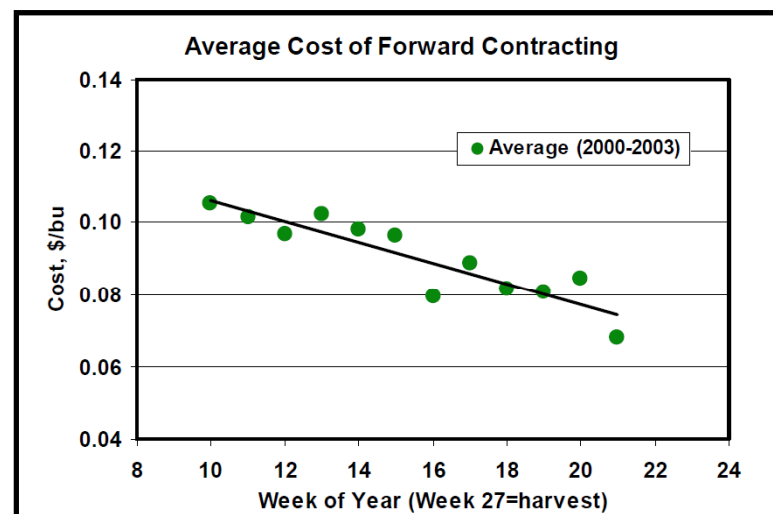


- Ability to predict based on historical basis levels is reduced
- Market signals could change quickly and dramatically
- Hedging price risk leaves you open to more volatile basis risk

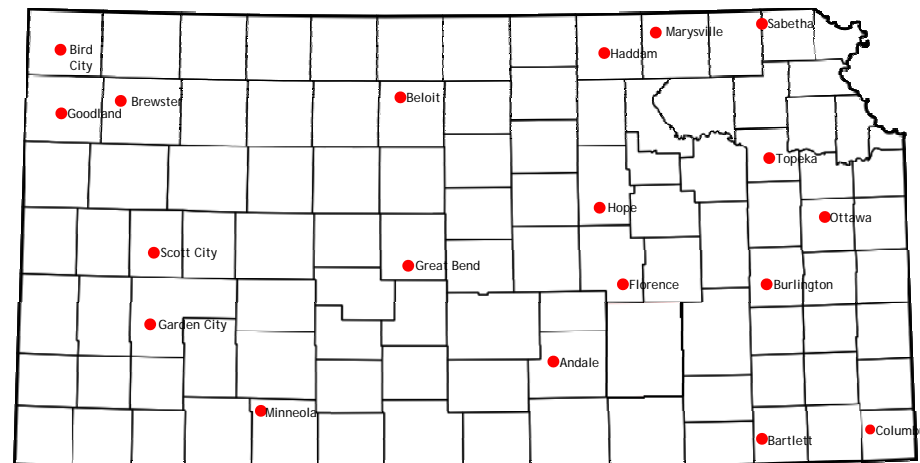
- Alternative to hedging
- Eliminates downside price risk and basis risk
 - No commission costs or margin calls
 - Fewer transaction costs (paperwork, time)
- Exposes you to **third party risk** and will cost you a **risk premium**

- Risk management still costs you
- Elevators will charge you a premium for accepting your price risk
- Expect this cost to increase as basis risk increases

- Previous studies
 - Cost of forward contracting wheat
 - Taylor, Dhuyvetter, & Kastens (2003)
 - Townsend & Brorsen (2000)
 - Brorsen, Coombs, & Anderson (1995)
 - Basis forecast power and risk premiums
 - Shi et al. (2005)
- Findings
 - Risk premium declines as approach harvest
 - Suggests as more information is available, basis risk declines



- Current research questions
 - Data used in studies are ‘old’ and don’t include current levels of risk
 - Are the elevators good at forecasting basis?
 - Determine the relationship between the risk premium and the basis variability
 - How much risk is ‘too much’?
 - When do the elevators stop offering forward contracts?



$$FC_t = F(0) - [F(t) + r(t)]$$

where $F(0) = B(0) + KC(0)$

$$F(t) = B(t) + KC(t)$$

$$FC_t = E_t[B(0)] - B(t) + E_t[KC(0)] - KC(t) - r(t)$$

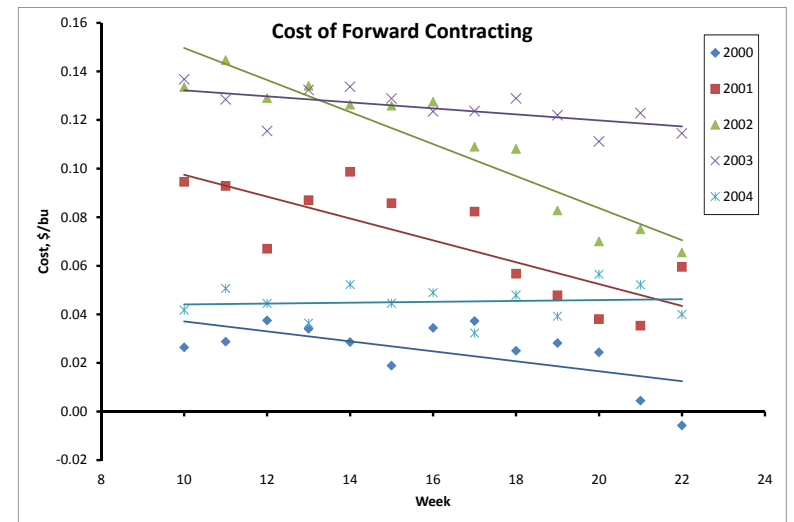
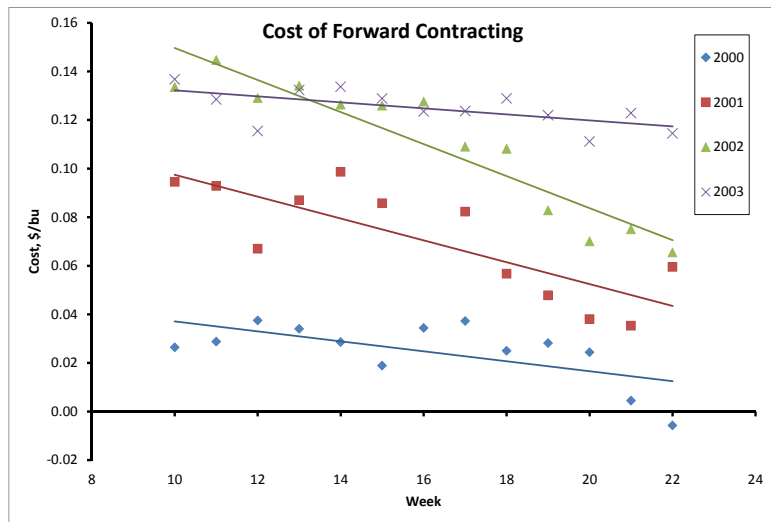
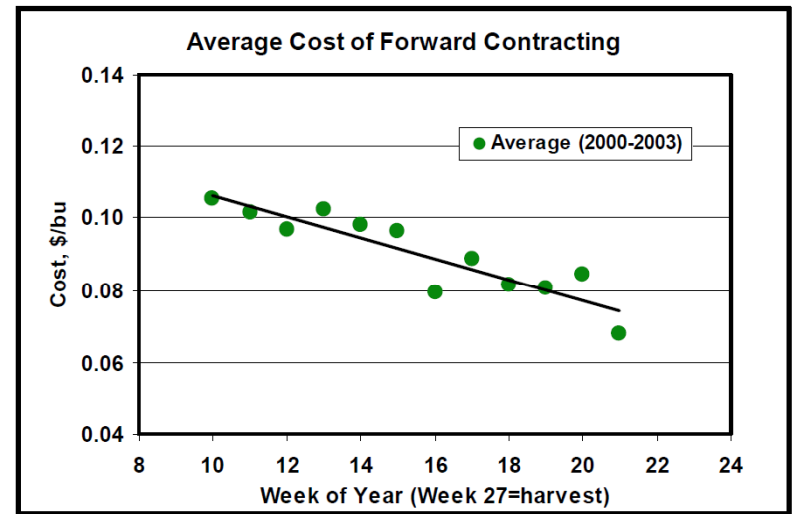
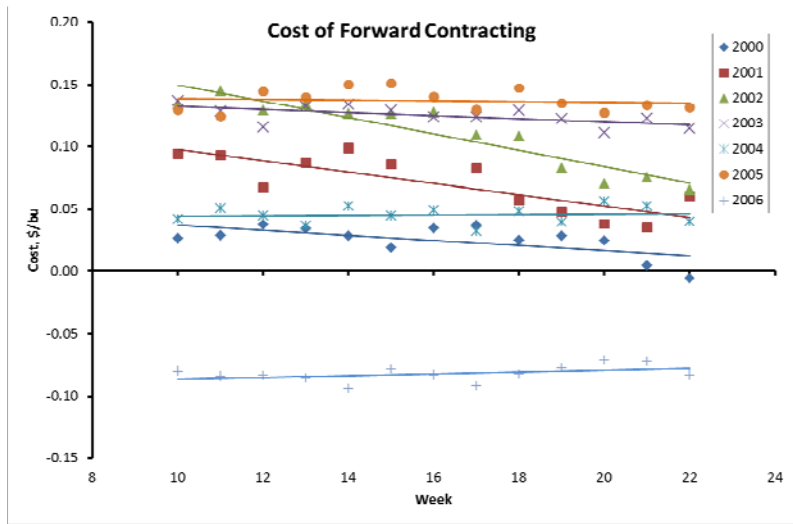
Model prices as a martingale: $E_t[KC(0)] = KC(t)$

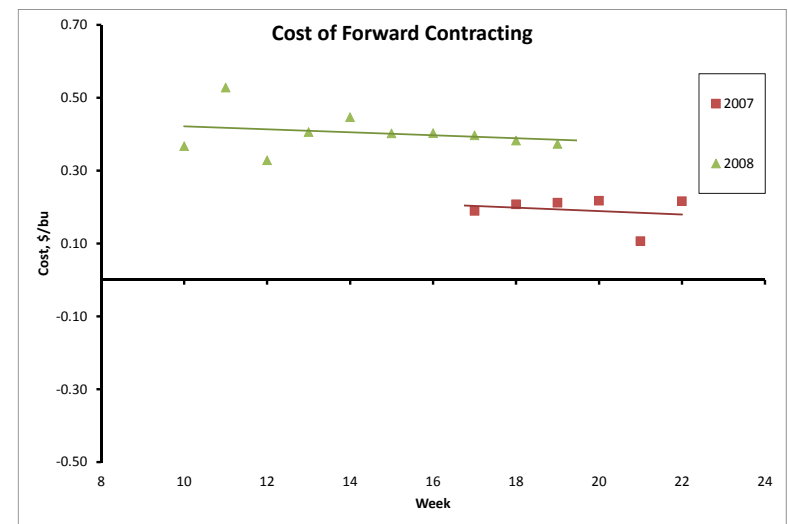
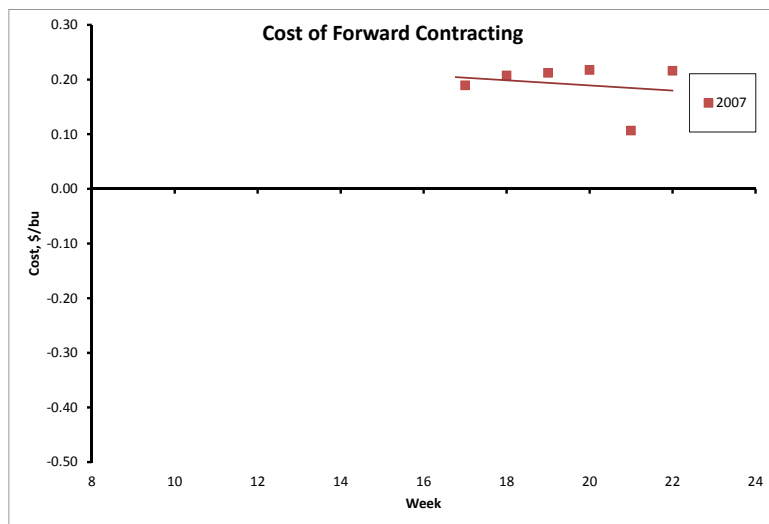
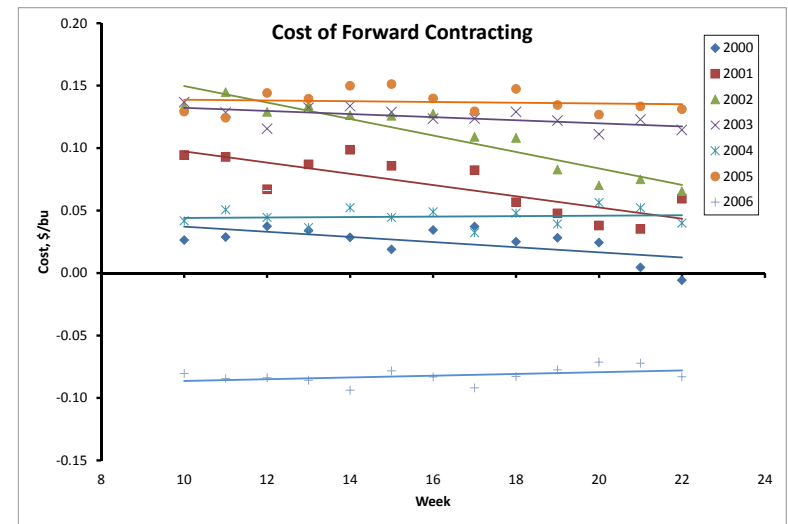
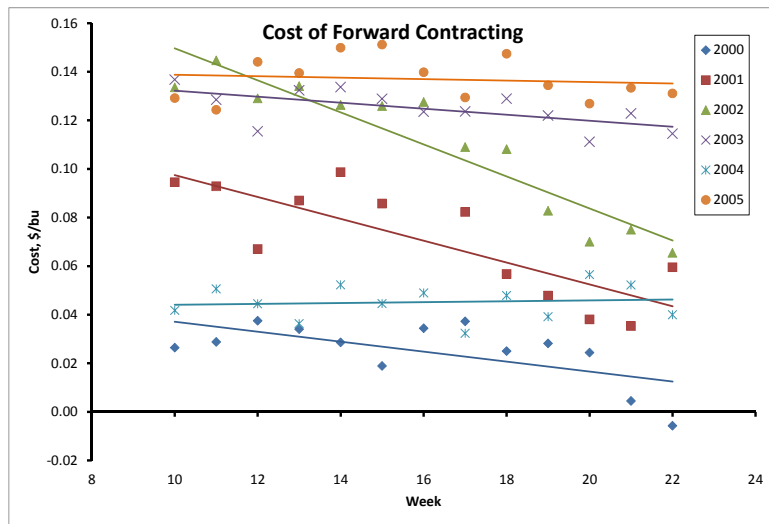
$$FC_t = \underbrace{E_t[B(0)] - B(t)}_{\text{Basis forecast error}} - \underbrace{r(t)}_{\text{Risk premium}}$$

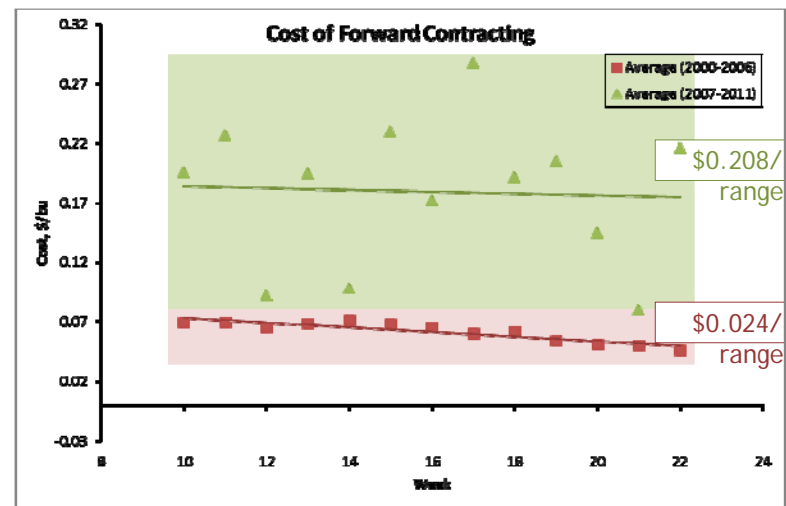
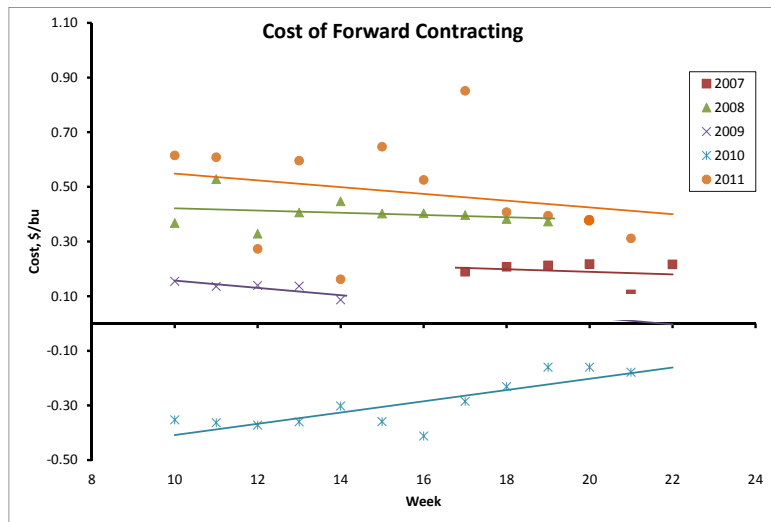
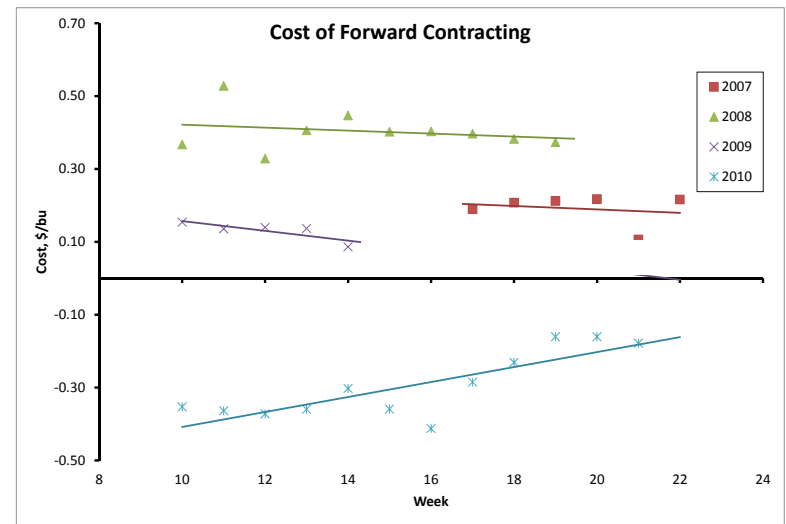
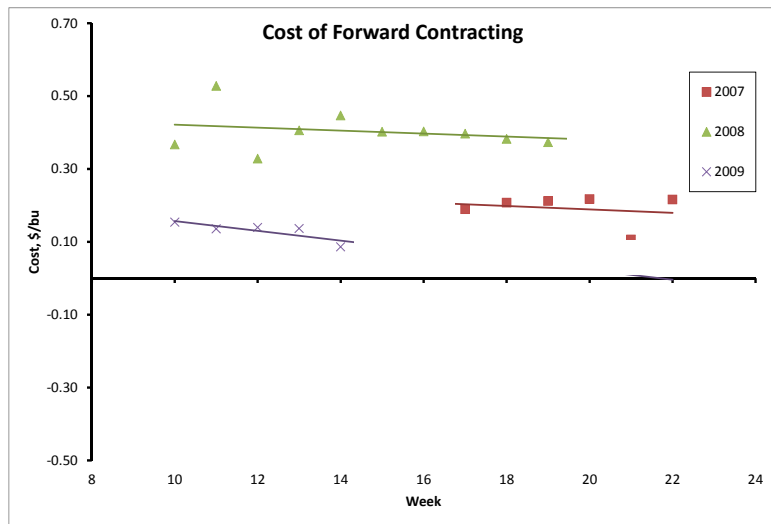
Basis forecast error

Risk premium

- How do we calculate the cost of forward contracting?
 - Expected harvest basis on date of forward contract sale
 - Actual basis at harvest
- Difference between the two:
 - Basis forecast error
 - Risk premium







- Previous estimates
 - Taylor, Dhuyvetter, & Kastens (2003): 9¢/bu
 - Townsend & Brorsen (2000): 6-8¢/bu
 - Brorsen, Coombs, & Anderson (1995): 2-5 ¢/bu
- Current estimates
 - 2007 to 2011 forward contracting costs are higher and more variable
 - Need to jointly address basis forecasting errors and risk premiums (Shi et al., 2005)

- Research
 - Structural model of forward contracting cost
 - Forecasting model of basis volatility and risk premiums
- Extension
 - Give producers more accurate picture of costs of forward contracting over time
 - Show impacts of basis volatility on elevator's forward bid pricing

Questions?

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References:

Brorsen, B.W., J. Coombs, and K. Anderson. 1995. "The Cost of Forward Contracting Wheat." *Agribusiness*, 11(July/August):349-354.

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